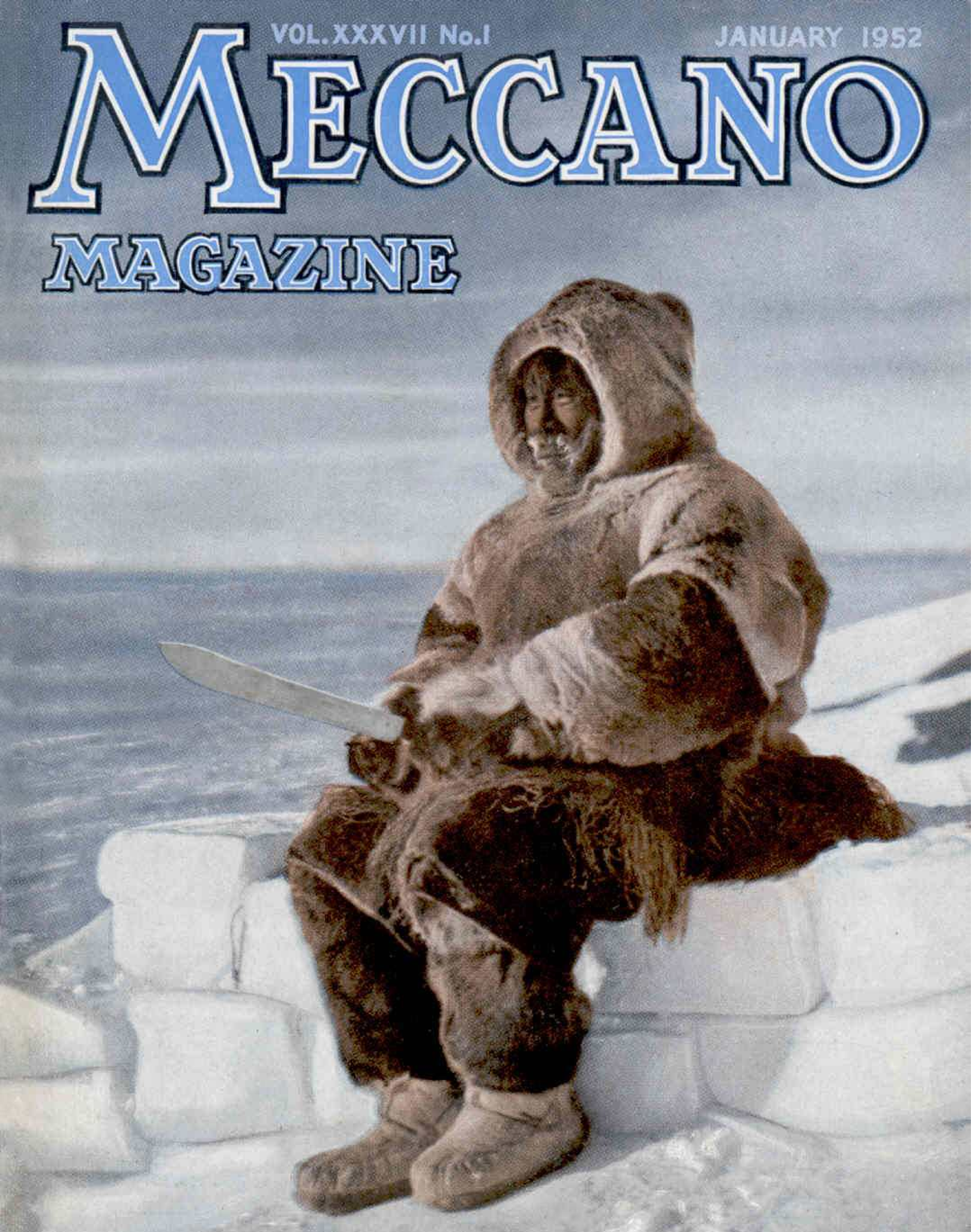
VOL. XXXVII No. I JANUARY 1952

MECCANO MAGAZINE



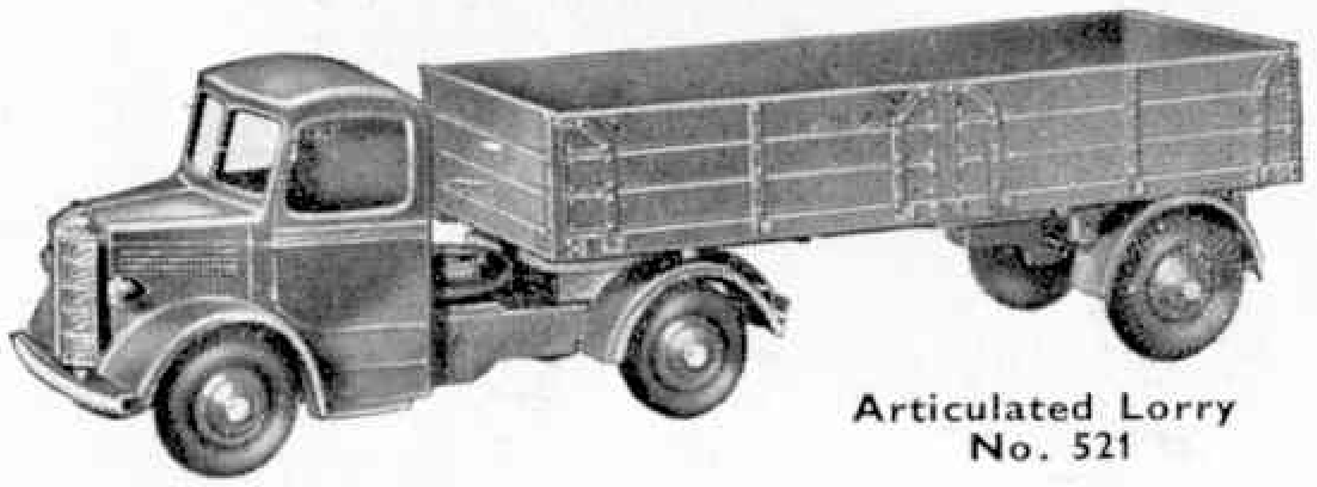
THE SNOW HOUSE BUILDER

9D.

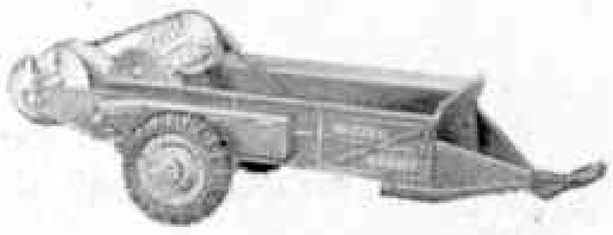
DINKY TOYS

TRADE MARK REGD.

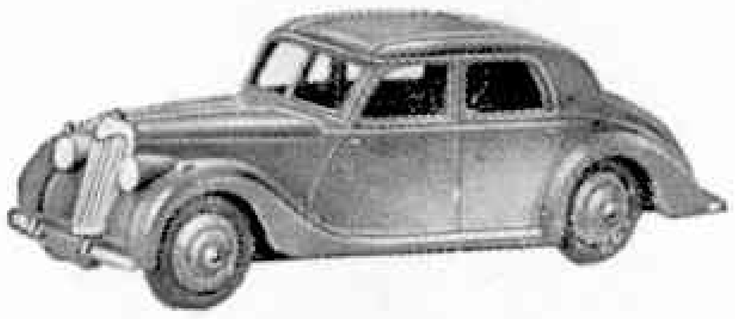
Dumper Truck
No. 562



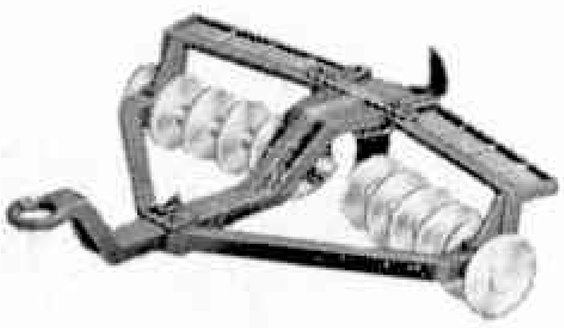
Articulated Lorry
No. 521



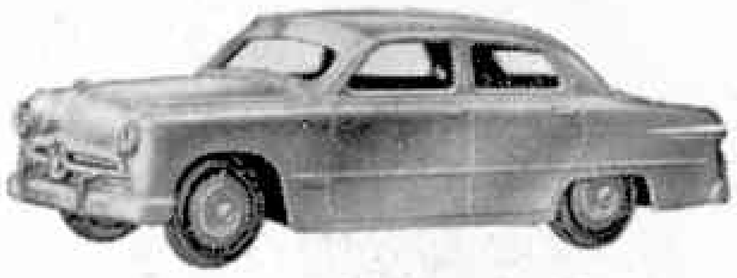
Massey-Harris Manure
Spreader No. 27c



Riley Saloon
No. 40a



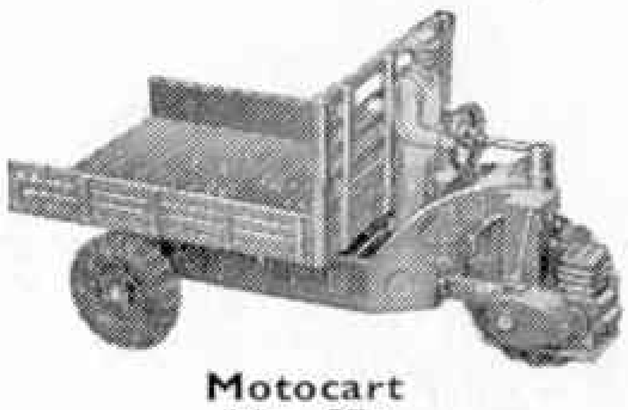
Disc Harrow
No. 27h



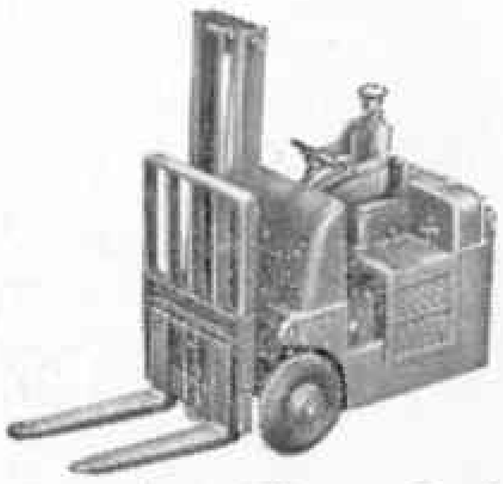
Ford "Fordor" Sedan
No. 139a

Refuse Wagon
No. 25v

Rover 75 Saloon
No. 140b



Motocart
No. 27g



Coventry Climax Fork
Lift Truck No. 14c

Austin "Atlantic" Convertible
No. 140a

Observation Coach
No. 29f

Foden Diesel 8-wheel
Wagon No. 501

Keep the wheels turning. Tyres for Dinky Toys can be obtained from your dealer

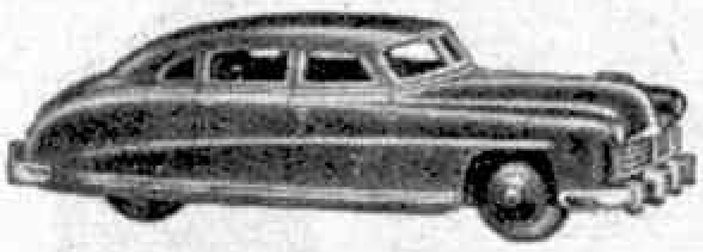
MADE IN ENGLAND BY MECCANO LIMITED

DINKY TOYS

TRADE MARK REGD.

Guy Van
No. 514

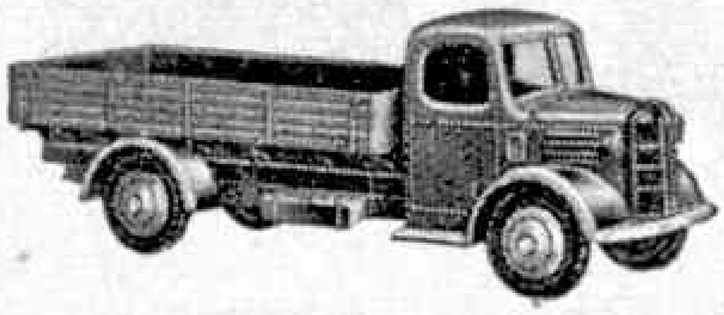
Comet Wagon with Hinged Tailboard No. 532



Hudson
"Commodore" Sedan
No. 139b

Land Rover
No. 27d

Triumph '1800' Saloon
No. 40b



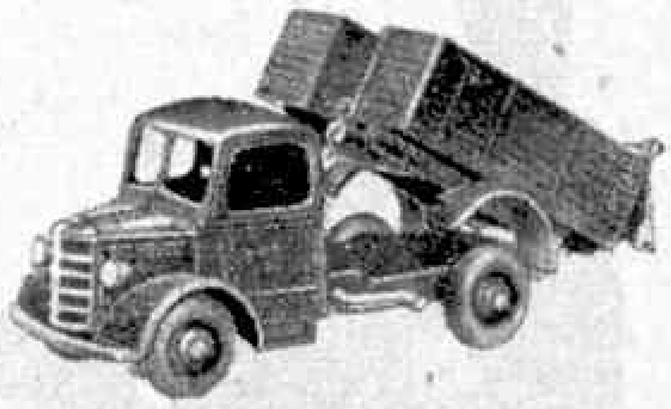
Austin Wagon
No. 30j

Austin Taxi
No. 40h

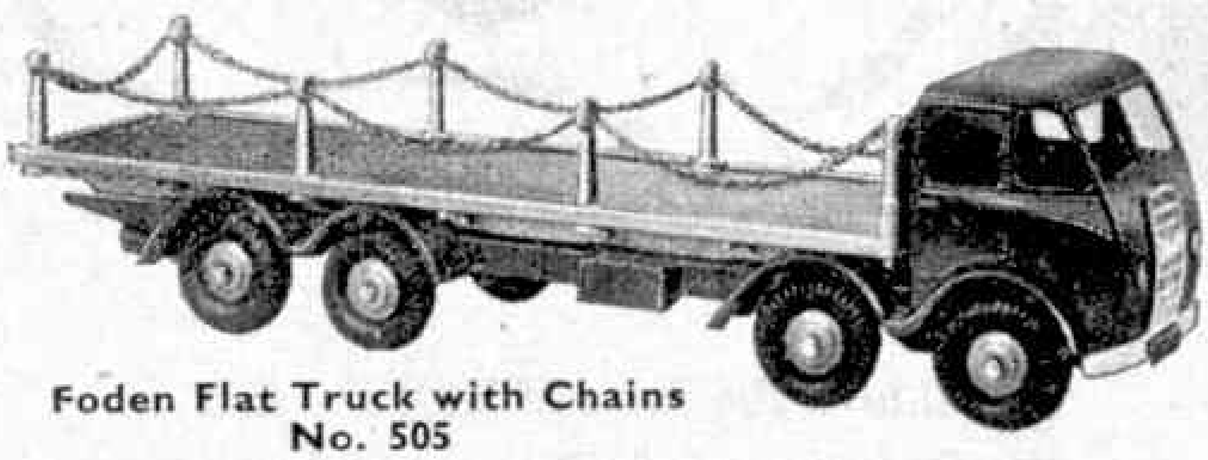
Breakdown Lorry
No. 25x

Daimler Ambulance
No. 30h

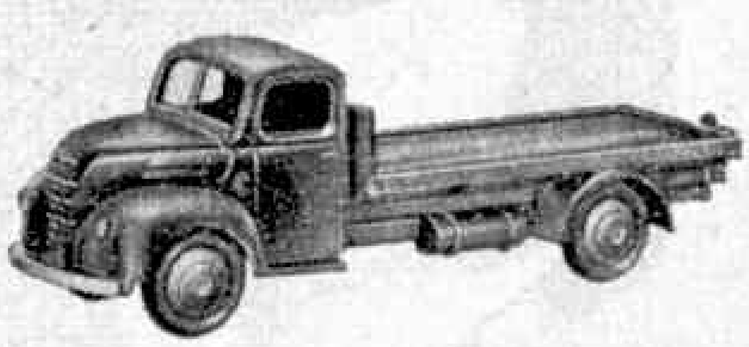
Estate Car
No. 27f



Bedford End Tipper
No. 25m



Foden Flat Truck with Chains
No. 505



Fordson "Thames" Flat Truck
No. 30r

Keep the wheels turning. Tyres for Dinky Toys can be obtained from your dealer

MADE IN ENGLAND BY MECCANO LIMITED

BRYLCREEM

FOR GO-AHEAD GROOMING . .

Watch the fellow in the fore-front of affairs — he uses Brylcreem. For Brylcreem smartness lasts through thick and thin, it grooms your hair perfectly, it gives you confidence. Go-ahead men everywhere use Brylcreem. They know that smartness and success go hand in hand, that well-groomed hair is the hall-mark of distinction.

Ask for Brylcreem — it's the perfect hairdressing. Tubs 1/8, 2/6 and large economy size 4/6. Handy tubes 2/6.

BRYLCREEM

THE PERFECT HAIRDRESSING

royds 73/38

HO(A)RSE?
GO-SUCK A
ZUBE

You'll love the taste of Zubes—and they'll keep you feeling warm however cold the weather! 5½d. an oz. loose; and in 8½d. and 1/4d. tins.

Teach yourself to sail

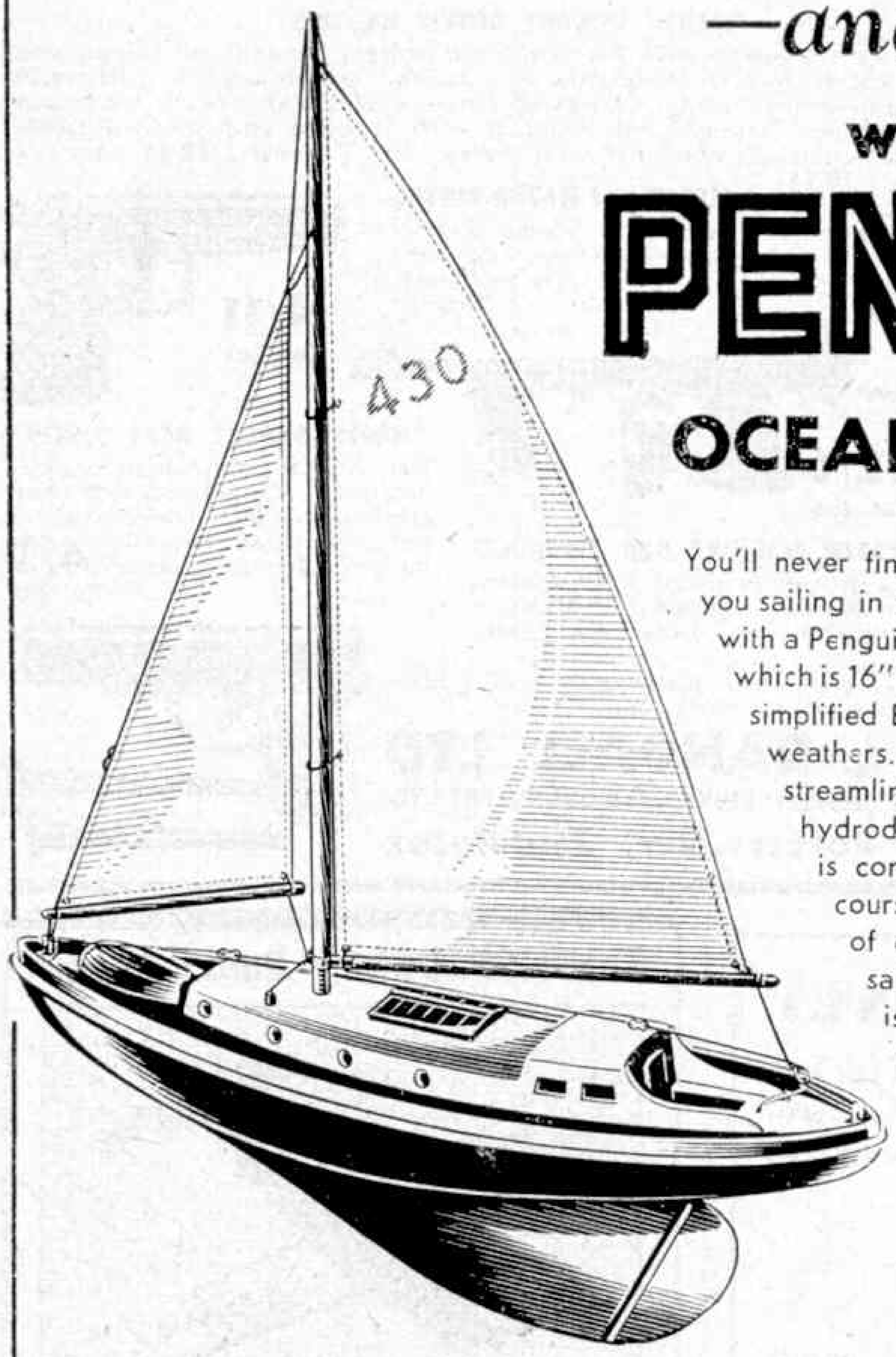
—and win

with a

PENGUIN

TRADE MARK

OCEAN RACER



You'll never find a book in the library to teach you sailing in the practical way that you'll learn with a Penguin craft. This first-class scale model, which is 16" long and 22½" high, has a specially simplified Bermuda rig for fast sailing in all weathers. The hull is scientifically designed, streamlined and fitted with an integral, hydrodynamic keel. The automatic rudder is connected to the main-sheet for true course-keeping. The mast and boom are of carefully selected wood and the sails are of best quality fabric. There is a cruiser type deck and cabin, with a detachable dinghy and rubber drain plug.

Price

29/6

This model is the fastest sailing yacht of its type in the world. VISIT YOUR LOCAL PENGUIN STOCKIST, ASK FOR THIS YACHT BY NAME AND BE THE CHAMPION MODEL YACHTSMAN IN YOUR DISTRICT.

• Available from your local dealer • We do not supply direct •

INTERNATIONAL MODEL AIRCRAFT LTD.

Merton, London S.W.19, England

LINES BROS GROUP

Cowboy Outfits for fun!

Tailor-cut and beautifully finished to ensure perfect fit

'MERIT' COWBOY OUTFIT No. 18/S

Complete with Western-style Suedeen-faced bolero, fringed and edged, with attractive leaf pattern in contrasting colours, and heavily studded with brass-finished dome-headed studs. Decorated chaps, gingham shirt with contrasting binding, and new artificial silk kerchief with jewelled and studded toggle. Good quality felt Cowboy hat and lariat. Size 5-6 years, **73/11** inc. tax; 7-8 years, **75/11**; 9-10 years, **77/11**; Packed in stout box.

'MERIT' JET WATER PISTOL

A super Water Pistol firing 200 shots with one filling. Strongly moulded in a variety of bright colours. In carton.

4/11 inc. tax

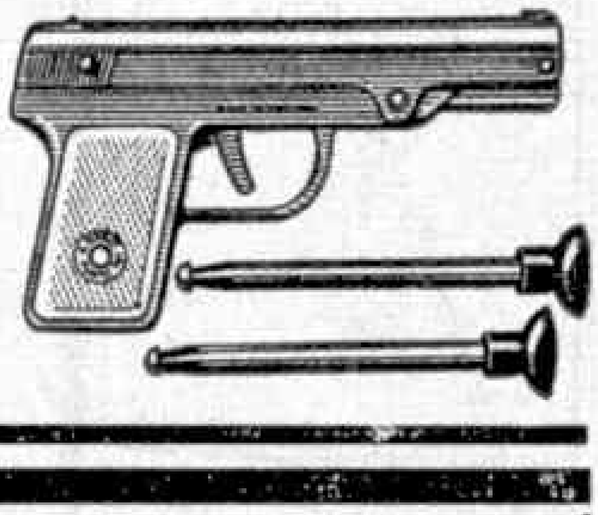
12/6 inc. tax

'MERIT' WATER MACHINE GUN, 'INVADER'

Exceptionally well moulded hard-wearing plastic, this 500-shot repeating sub-machine gun will outshoot any other water gun.

'MERIT' SAFETY DART PISTOL

(below) Strongly moulded, brightly coloured. Complete with two suction-pad darts which stick to any smooth surface. Packed in attractive carton. **4/3** inc. tax



See 'MERIT' and S.E.L. products at good dealers. Send postcard for illustrated List to

J. & L. RANDALL LTD

(Associated Company: SIGNALLING EQUIPMENT LTD)

(Dept. 3), Merit House, Potters Bar, Middlesex

FOR EXPORT ONLY

What disappointments we had for five or six years. Everything good, everything desirable going abroad in exchange for dollars.

but now available—

TO YOU

1. A hand-built scale model goods Railway Set. £11-11-0
2. The most perfect passenger, main line Railway, built by experts, and a delight to look at. Powerful, s.rong and economical. £24-3-0

Illustrated brochure on request

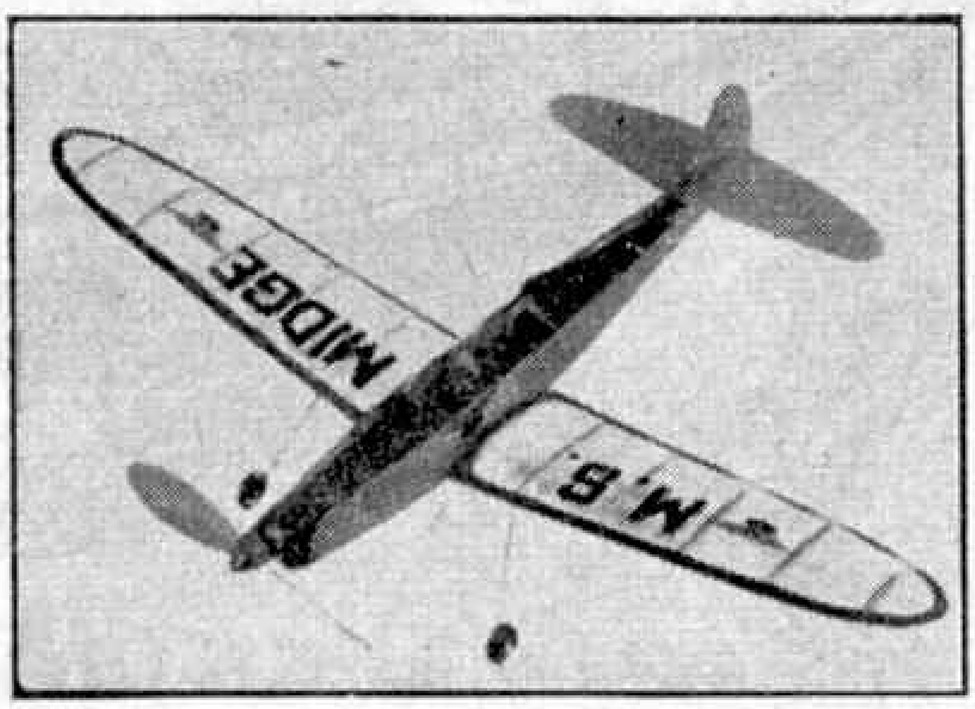
Export enquiries invited

LEEDS MODEL CO. LTD.

30, DEWSBURY ROAD, LEEDS

ENGLAND

The "MODEL SHOP" Does it Again!



'M.S.' MIDGE RUBBER POWERED SEMI-SCALE
AMAZING VALUE MODEL

Complete Kit

6/9 postage 6d.

Sensational features of this new kit which is styled in the modern low wing fashion, include . . . .

- Finished Plastic Prop.
- Moulded Plastic Cowling
- Pre-cut Fuselage and Tail Parts
- Printed Sheet and Stripwood
- Tissue, Cement, etc.

Span	... 24 ins.
Length	... 18⅛ ins.
Weight	... 2 ozs.

Other Kits This Range

'M.S.' GNAT I 20 in. span **6/9**

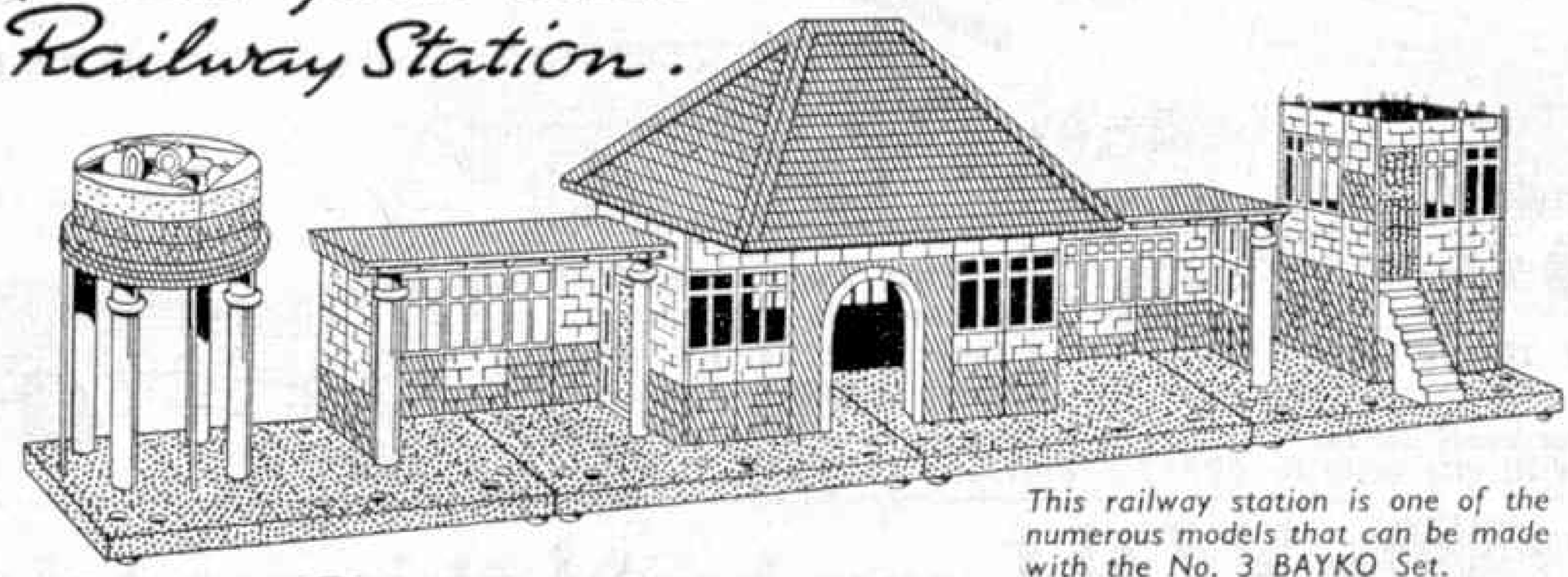
'M.S. GNAT II 26 in. span **7/11**

PRICE LIST: 2d.

THE MODEL SHOP

3a, RIDLEY PLACE, NORTHUMBERLAND ST., NEWCASTLE-ON-TYNE 1. *Telephone: 22016*

Build your own Railway Station.



This railway station is one of the numerous models that can be made with the No. 3 BAYKO Set.

ASK YOUR DEALER FOR DETAILS OF

BAYKO

the Original Plastic

BUILDING SETS

Made from richly coloured, high-grade plastic material, BAYKO is beautifully finished, easily cleaned and will survive years of hard treatment.

PRICES:

No. 0	15/-	No. 0x	7/6
No. 1	22/6	No. 1x	15/-
No. 2	37/6	No. 2x	22/6
No. 3	59/-	No. 3x	60/-

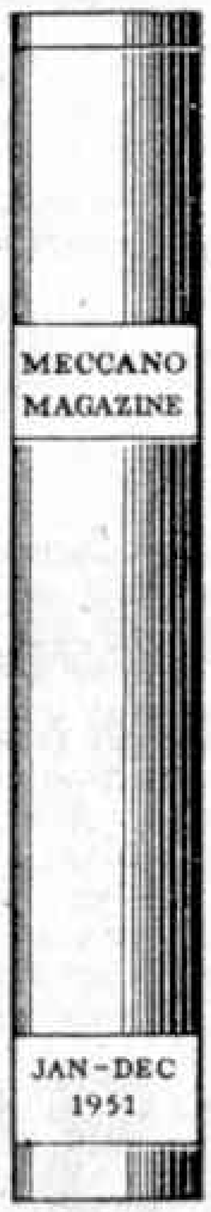
PLIMPTON ENGINEERING Co. LTD.
GIBRALTAR ROW, LIVERPOOL 3

NOW IS THE TIME TO ADD THAT DETAIL TO YOUR MODEL RAILWAY

TELEGRAPH POLES—LAMPS
FENCES — CRANES — CARS
LORRIES — ANIMALS
MERCHANDISE, ETC., ETC.

IF YOU HAVE NOT ALREADY RECEIVED OUR LATEST FREE CATALOGUE (DEC.) SEND FOR ONE TO-DAY! ("00 ONLY")

GEORGE BRADSHAW
5 & 6, WESTERN ROAD
HOVE, SUSSEX



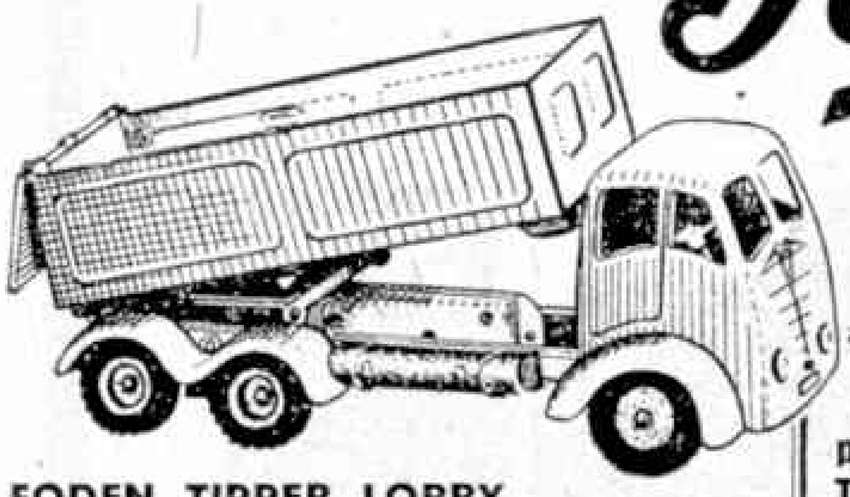
How to get your "M.M." bound

Readers of the "*M.M.*" can have their copies of the 1951 issue bound in the official cover by Messrs. T. L. Duncan, 20, Cumberland Street, Liverpool 1. This cover is in cloth and morocco, and the words "MECCANO MAGAZINE" are embossed in gold on the back, with the year. The cost is 11/6, including return carriage.

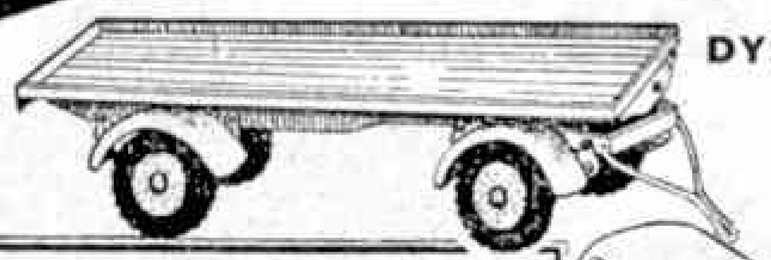
Magazines to be bound in this way should be sent, carriage paid, to Messrs. T. L. Duncan at the address given, with a postal order to cover the cost. (Please do not send stamps or cheques). Readers doing this should say whether they wish the coloured covers and the advertisement pages to be included or not.

Volumes of the "*M.M.*" from 1942 to 1950 also can be bound in the official cover at the same rate. The charge for those prior to 1942 is 16/6.

THE Foden FLEET

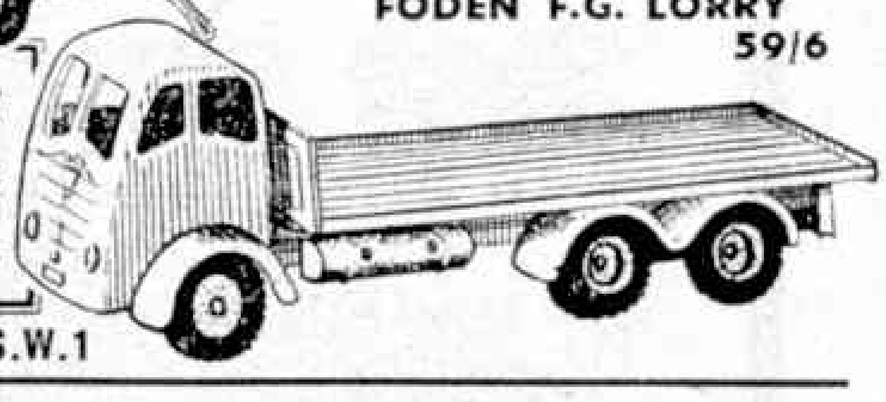


FODEN TIPPER LORRY
65/-



DYSON 8 TON TRAILER
18/6

FODEN F.G. LORRY
59/6



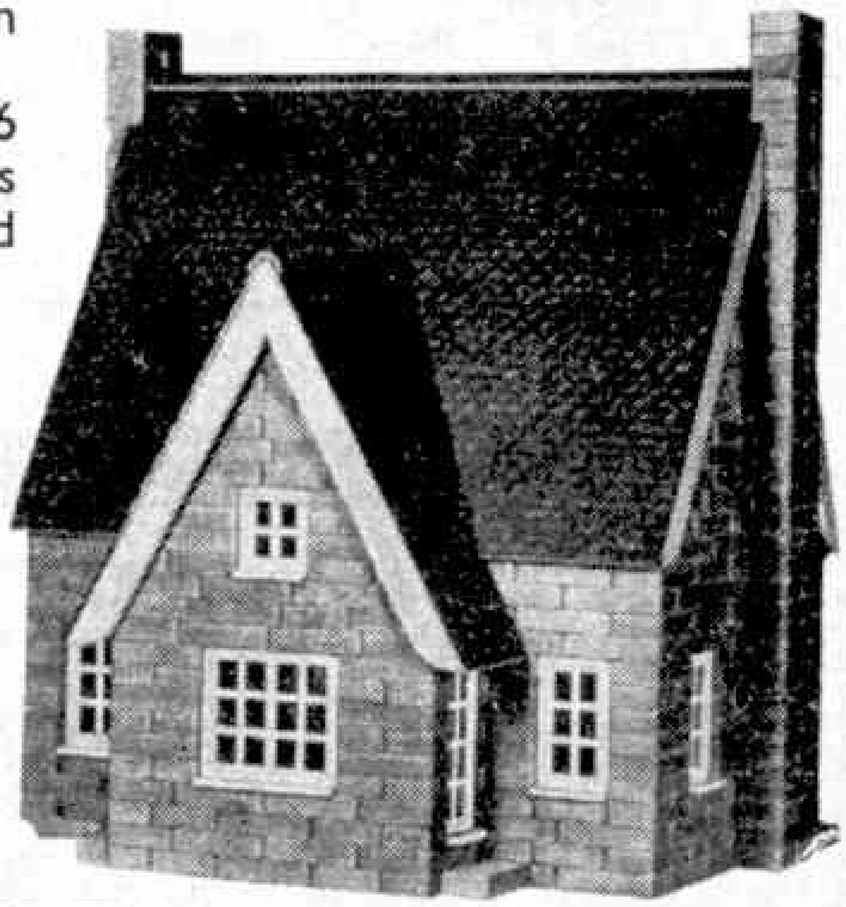
Built from standardised parts, all replaceable. They come to you ready assembled, easily dismantled.

Ask your usual dealer.
If any difficulty write to: ABBEY-CORINTHIAN GAMES CO., London S.W.1

YOU can build this model Inn

The Brickplayer Kit contains miniature bricks in all required shapes, mortar, roofing, metal or plastic windows and doors, plans and instruction booklet. All models are architect designed to "0" gauge scale. Buildings can be permanent or dismantled by merely soaking in water and the bricks used again and again.
Brickplayer Kits at 28/6 and 52/6 and Accessories are available from good toyshops and stores.

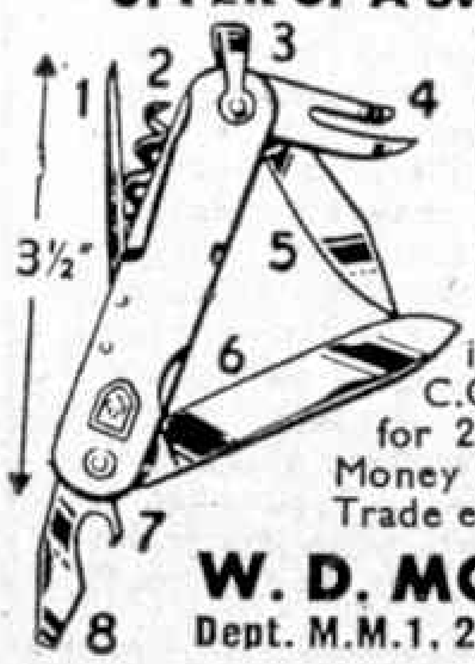
ENTER for the BRICKPLAYER COMPETITION
Prizes of £10 10s., £5 5s., and £3 3s., and a number of consolation prizes of Brickplayer Accessories will be awarded for winning models. Write for full details.



BRICKPLAYER

If your dealer cannot supply, write for address of nearest stockist to:
J. W. SPEAR & SONS LTD. • Dept. M • Enfield • Middlesex

SENSATIONAL
OFFER OF A "SWISS" COMPANION KNIFE



with EIGHT attractions—Awl, Corkscrew, Safety Ring, Tin-Opener, 1½ in. Blade, 3 in. Blade, Bottle Opener, Screw-driver. Finest French make, razor-sharp, strong yet light and handy. Easily worth double.

Send 9/- for immed. delivery, C.O.D. 1/- extra. 3 for 25/-. 5 for 40/-. Money back guarantee. Trade enquiries invited.

8/6 POST etc. 6d

W. D. MORGAN & CO. LTD.
Dept. M.M.1, 2, Gray's Inn Road, London W.C.1

ONLY 1/9

THE NEW WONDER ELEMENT
For ALL GAS LIGHTERS

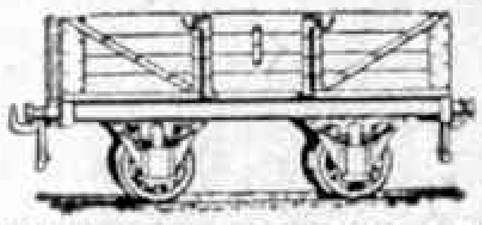
Get this new and improved gas lighter element to-day! It will outlast all others. Works on 1.5 v. or 2.5 v. battery. Current consumption is negligible and dry-cells last up to ten times as long with JET-VITA—the new wonder element. **A six months written guarantee is given with each element.**
If your dealer cannot supply send P.O. 1/9d., giving his name and address to:—

JET-VITA

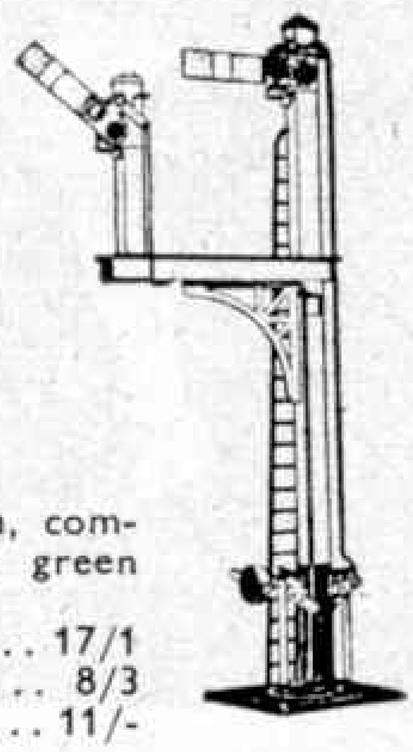
Sole Concessionaires:—
Vitality Bulbs Ltd., Neville Place, London N.22

ACCESSORIES FOR THE GAUGE '0' ENTHUSIAST

BASSETT-LOWKE accessories and fittings are immensely popular amongst Gauge 'O' Modellers. Their accuracy and realism greatly enhance Model Railway systems, creating the most true-to-life atmosphere. Also they are the best value for money.



TINPLATE GOODS ROLLING STOCK, beautifully made—the best value for money. Open van as illustrated, 10/4; also available, Covered van, 11/11, and Brake van, 13/9.



SIGNALS, single and double arm, complete with ladders and red and green spectacles. Price from:
Bracket Signal as illustrated 17/1
Also available Single arm signal .. 8/3
Two arm signal 11/-

WRITE TO-DAY for the enlarged GAUGE 'O' CATALOGUE. Its 40 pages contain details of a host of accessories. Price only 1/-. Ref.: GO/17

BASSETT-LOWKE LTD.

NORTHAMPTON

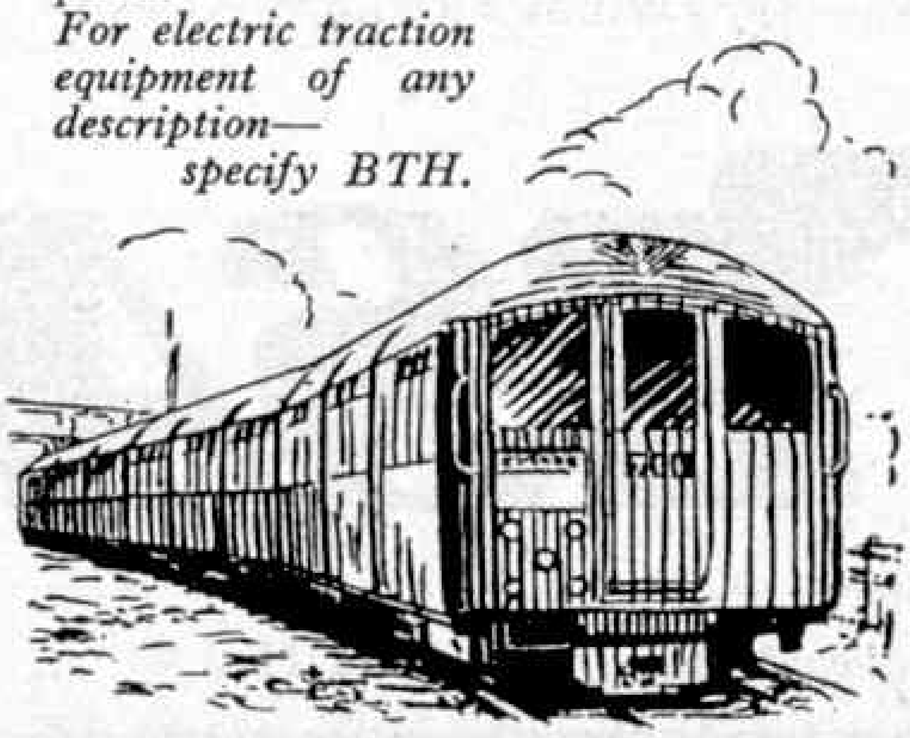
LONDON: 112, High Holborn, W.C.1
MANCHESTER: 28, Corporation Street

Railway Equipment

Whether for main-line or suburban service, BTH electric traction equipment, of exceptional reliability and proved performance, can be supplied.

For electric traction equipment of any description—
specify BTH.

by B T-H



THE
BRITISH THOMSON-HOUSTON
COMPANY LIMITED, RUGBY, ENGLAND. A 4279

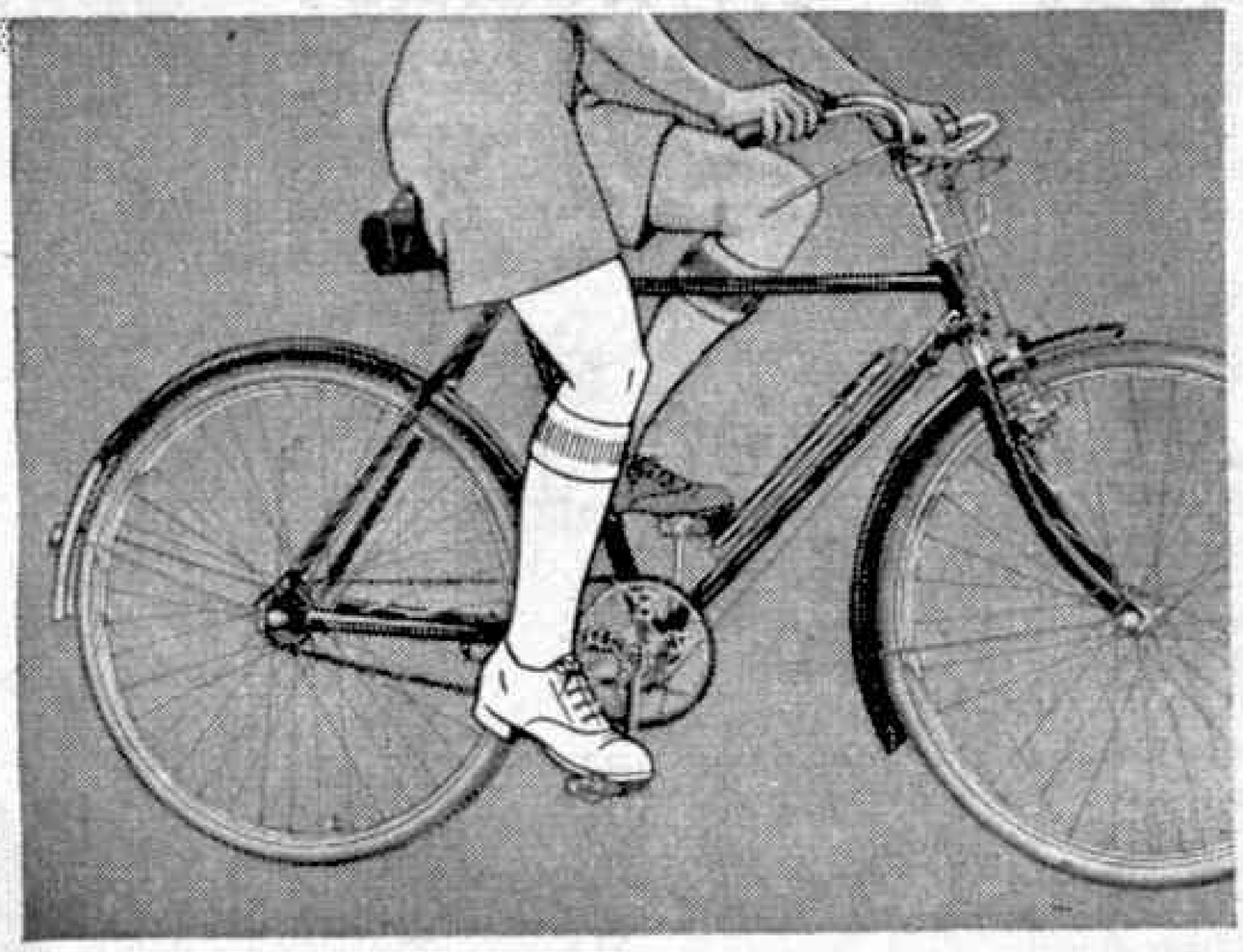
Keep your eye on Halfords

. . . and be sure of the finest selection of spares, accessories and equipment, including a full range of "Halford" "Raleigh" and "Robin Hood" Cycles —there's a Halford's branch in every large town.

THE HALFORD CYCLE COMPANY LIMITED
HEAD OFFICE
239 CORPORATION STREET
BIRMINGHAM 4.

BRANCHES IN ENGLAND, SCOTLAND AND WALES

HOW TO RIDE YOUR BSA CORRECTLY



USE THE ball of your foot for pedalling, and bring the toe down on the downward movement. "Ankling" as the experts call it uses the full power of the leg muscles and gives you a much smcother, easier ride. Pedalling with the instep or arch of your foot — as lots of beginners do — wastes effort and is definitely *wrong*.

BSA JUNIOR ROADSTER SAFETY MODEL

LOOK FOR THE "SAFETY MODEL" transfer on the seat tube. Light but sturdily built 18 in. frame. Black and chromium finish. Wheels 24 in. Dunlop tyres. Chromium plated, upturned handlebar. Roller lever brakes. Price £10.10.0 plus £2.9.0 Tax. (Colour finish extra—boy's Windsor Red, girl's Green.)

If you're really going to enjoy your cycling

IT'S TIME YOU HAD A BSA

If you'd like a free catalogue write to

B.S.A. CYCLES LTD., 31, Armoury Road, Birmingham 11

Next Month: "A SHINING CANADIAN ARCH"

MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

Vol. XXXVII
No. 1
January 1952

With the Editor

Best Wishes for 1952

The year 1951 has come to an end and we now have a new year before us. I hope that this will be a time of progress for all readers, and I am sure that they will join with me in the hope that it will also be a year of even greater prosperity for the "*M.M.*" The Magazine numbers far more readers nowadays than at any time in its long history, but there are thousands more to whom it can be both attractive and valuable. Every reader therefore should tell his friends about his favourite Magazine, and if at the same time he tells me his friend's name and address I will send a specimen copy and full details to help him.

Are You a Ferroequinologist?

Many years ago I began to collect the names and numbers of locomotives. Presently I realised that just listing these in a book was not a particularly inspiring pursuit, but by that time I had begun to take a real interest in railways generally. I was delighted when I encountered engines of such famous classes as the Great Northern and North Eastern "Atlantics," or the "*Stars*," and later the "*Castles*," of the G.W.R., and I became friendly with all the locomotive giants that followed these early favourites—but all the time I did not know that I was a ferroequinologist!

It gives me a feeling of real distinction to know that I can lay claim to such a resounding title. Many readers will have dissected the word by this time and will know that it means one interested in the Iron Horse, and I am sure those who are railway enthusiasts will share my pride in being entitled to use it.

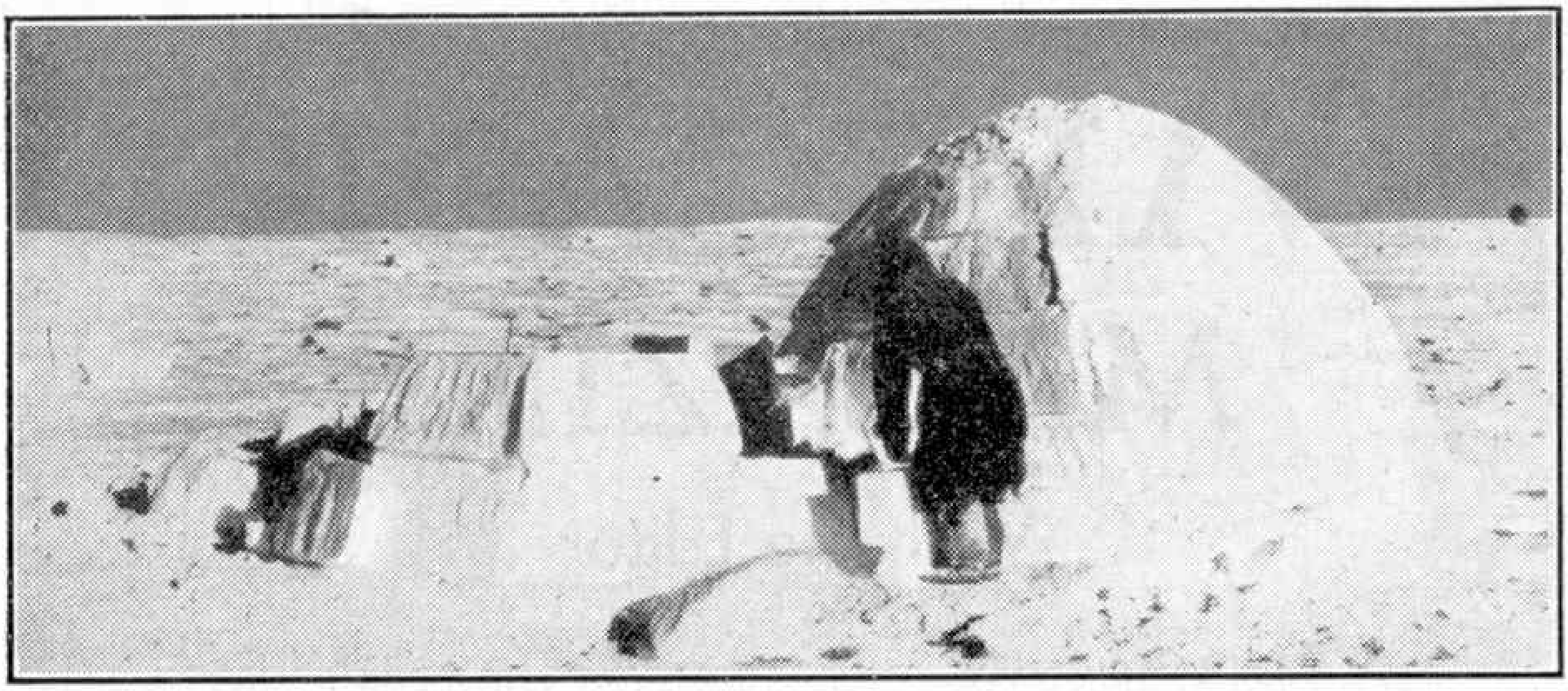
All who wish to consider themselves just "loco fans" may do so, of course, but there is no real ground for such modesty. Both expressions are American in origin. The new one has made recently what seems to be its first recorded appearance, in an American dictionary, and it has come to my notice through a paragraph in the "*Model Railroader*," an American monthly that has given it a hilarious welcome.

The "M.M." in Australia

With the appearance of the present issue of the Magazine it has become necessary to raise its price in Australia to 1/3. This is due partly to an increase in the sales tax on the Magazine in that Dominion, and partly to a general rise in costs. The change is made with the greatest reluctance, but I am sure that Australian readers will realise that it is inevitable and will continue to enjoy in the Magazine the wealth of articles and features that have distinguished it in the past and have made it unique among boys' publications.

This Month's Special Articles

	Page
Snow Houses in the Arctic .. by V. Burton	2
World's Largest Bus Terminal ..	4
Elephants and Chimpanzees .. by Felix O'Donnell	6
Toll Road Relics .. .. .. by Arthur Gaunt, F.R.G.S.	9
Sport on Snow and Ice .. .. by W. H. Owens	16
"First Course Navigator Please" by Ronald Hastings	22
Printing Books for the Blind ..	26
Schull and Skibbereen Railway .. by C. L. Fry	28



Snow Houses in the Arctic

By V. Burton

NO form of housing offers greater protection against cold than the snow house. Wilhjalmur Stefansson, the Canadian explorer, says he has sat in an igloo stripped to the waist sweating and quaffing pints of iced water while outside the temperature hovered around 50 deg. F. below zero. In fact, it can be unbearably hot in an igloo.

When first you enter a newly-made igloo you feel certain the roof is about to collapse. For the heat from just one primus stove causes moisture to stream down the snow walls around you. But the cold outside draws this moisture through the thickness of the walls to form a coating of ice on their outer surfaces.

In the beginning air percolating through the walls becomes heated, rises and works its way out through small holes in the dome. But as the walls turn to ice so the entry of air is restricted, and in a small igloo the "fug" becomes such that the flame of the primus stove turns blue for want of oxygen!

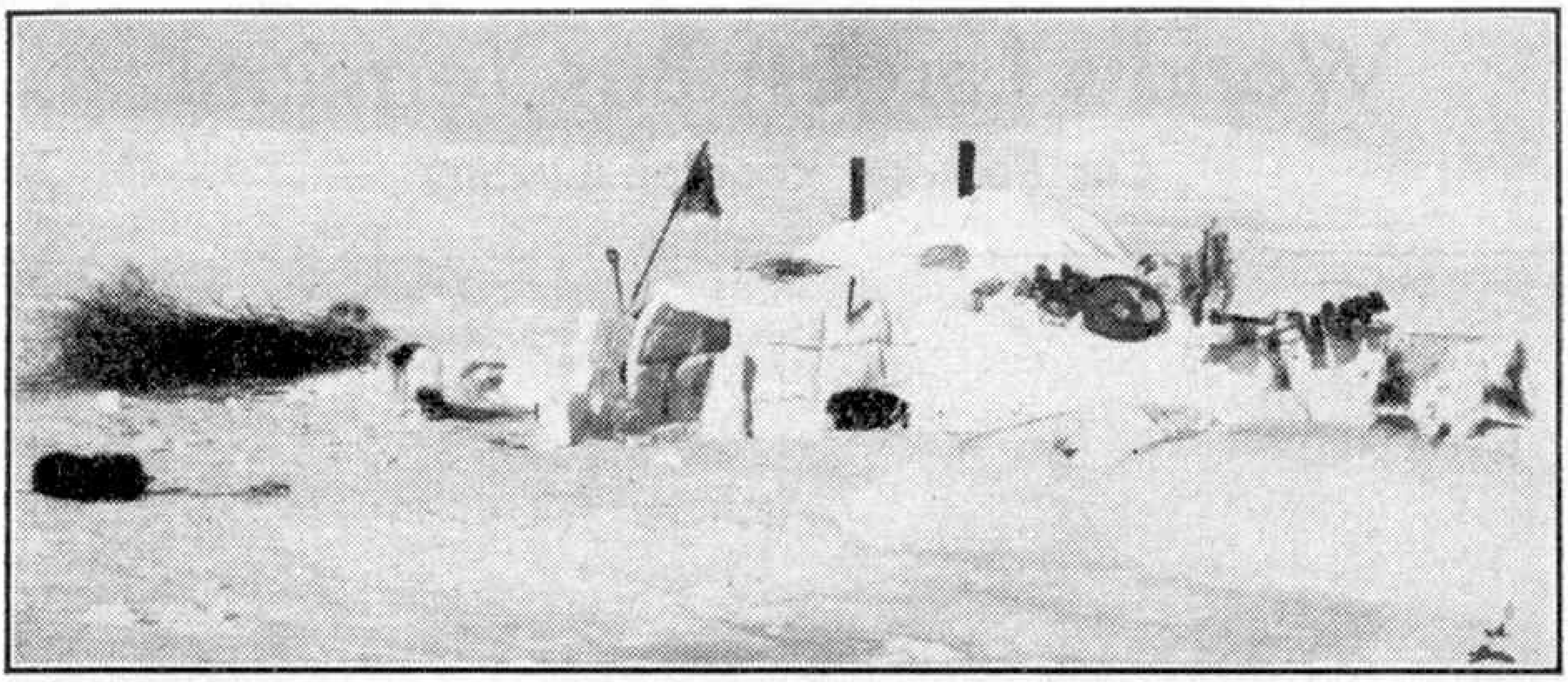
The igloo, traditional home of the peace-loving Eskimo, has even been turned to military purposes. Tests have proved snow walls capable of withstanding a near miss by a 500 lb. bomb and of "absorbing or deflecting rifle fire." The igloo also offers perfect camouflage in snowy lands and a means of defeating extreme cold.

Small or temporary igloos saved many a soldier from being frozen to death during the last war, and the main duty of the Eskimo instructors at the recently established "Survival Schools" in Arctic Canada or Alaska is to teach recruits how to build igloos.

The course begins with a lecture, in which the recruits are taught how to select suitable snow, how to cut snow blocks and how to lay them one upon the other in a circle, with each row brought in towards the centre to form the dome. Then the Eskimo instructor gives a practical demonstration outside in the snow, where the temperature may be down in the minus forties or fifties.

The military future of the igloo was founded shortly before the war when Birch Lindgren, a Swedish architect, saw in the snow-house a means of saving life among lumbermen, shepherds and travellers in Northern Scandinavia. To test his theory he went off into the Swedish mountains. In place of tents he took with him a small hip-pocket shovel—and he also took a big risk, because he was inexperienced in igloo-building and to have been caught in a blizzard without shelter could well have resulted in death. But the small igloo he built defeated the cold of a five-days blizzard, and Lindgren, a slightly built, serious faced man, started igloo-building schools to extend the new idea in architecture.

Our cover this month shows an Eskimo igloo builder with a knife used for cutting snow blocks. The illustration at the head of the page shows how a snow house is completed by an entrance tunnel.



This typical Eskimo home is large enough to accommodate nine sleepers warmly and comfortably on its bed-platform.

Up to then the igloo had not been seen in Europe, but very soon Finnish troops were using the snow house all along the 1939 front with Russia. Then the Russians learned that igloos could be used as advance machine-gun posts, and even as field hospitals.

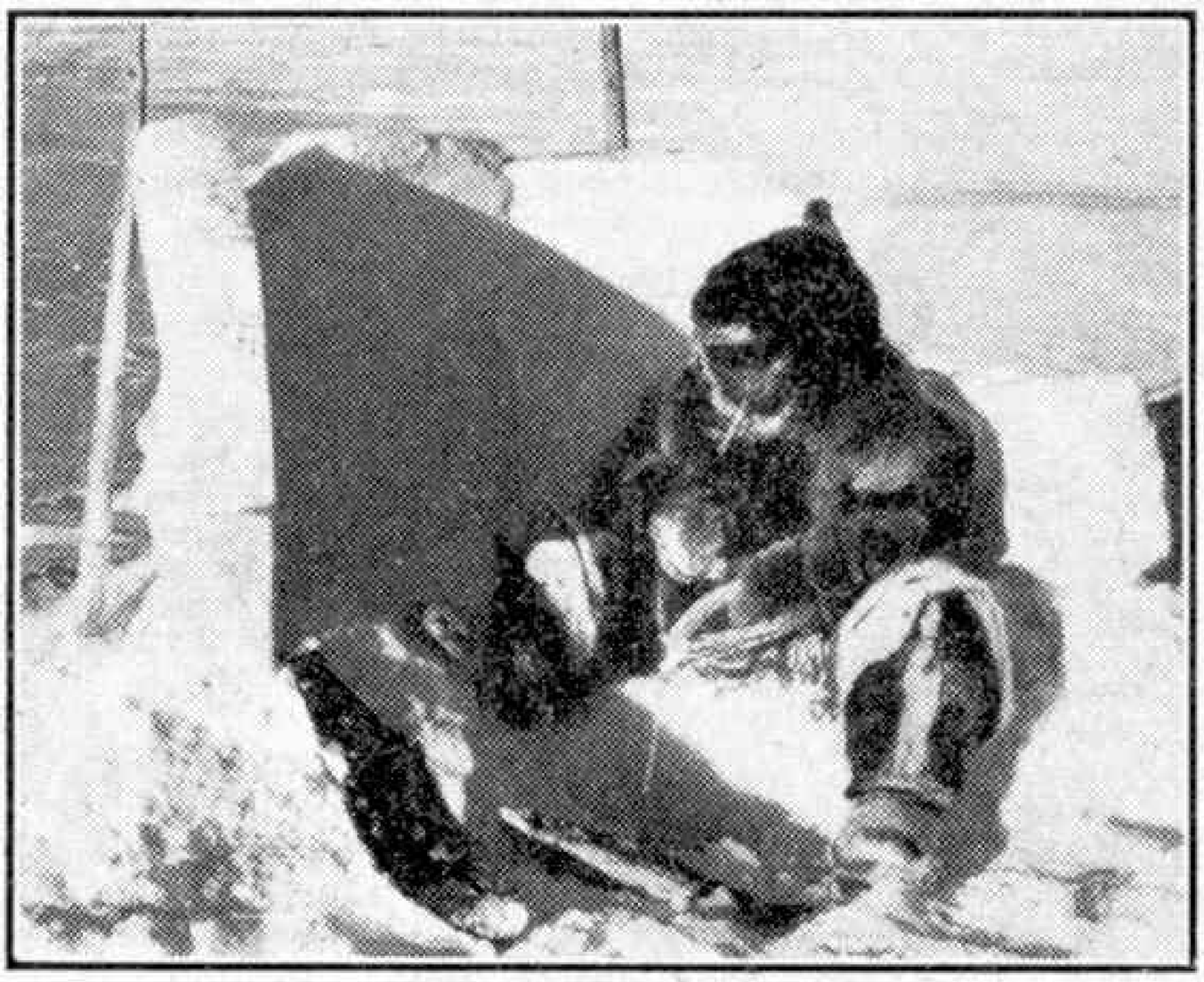
In Arctic Finland during the last war more wounded died from cold than from wounds. The Finns and the Russians devised double-skinned hospital tents, and since the war American scientists have developed an electrically-heated hospital tent. But what happens if the electricity supply fails? Or if bullets pierce the tent fabric? "Why, the wounded die and the staff get frost bite—or we build an igloo, not one of the cramped little shelters you use as machine-gun posts, but a roomy one with a tunnel entrance, like you see in Eskimo villages."

The temperature in the big permanent igloo can reach "greenhouse heat" without the roof caving in. Built with a raised "bed-platform" opposite the tunnel-entrance, it offers complete protection against the elements.

Stefansson, who has already been mentioned, has described an episode in which Harold Noice, one of his companions on an expedition, insisted that it could not be warm in a house made of ice. He sat on the floor and shivered despite his furs, glaring at Stefansson who, apparently warm and comfortable, sat in his shirt and pants on the bed-platform.

"You're just putting on an act," Noice raved. "If it's warm in here how is it the stew in that pot is frozen solid?"

Stefansson replied that the temperature down there on the floor was about 40 below zero, but "up here on the bed-platform it's about that of a nice spring day in England." Hot air rises, he explained, and the cold air outside could enter along the tunnel only as the hot air in the igloo escaped through the minute vents in the roof. "The result is you can sit up here on the bed-platform in your shirt quite comfortably, but if you dangle your legs over the edge you'd better put your fur boots on!"



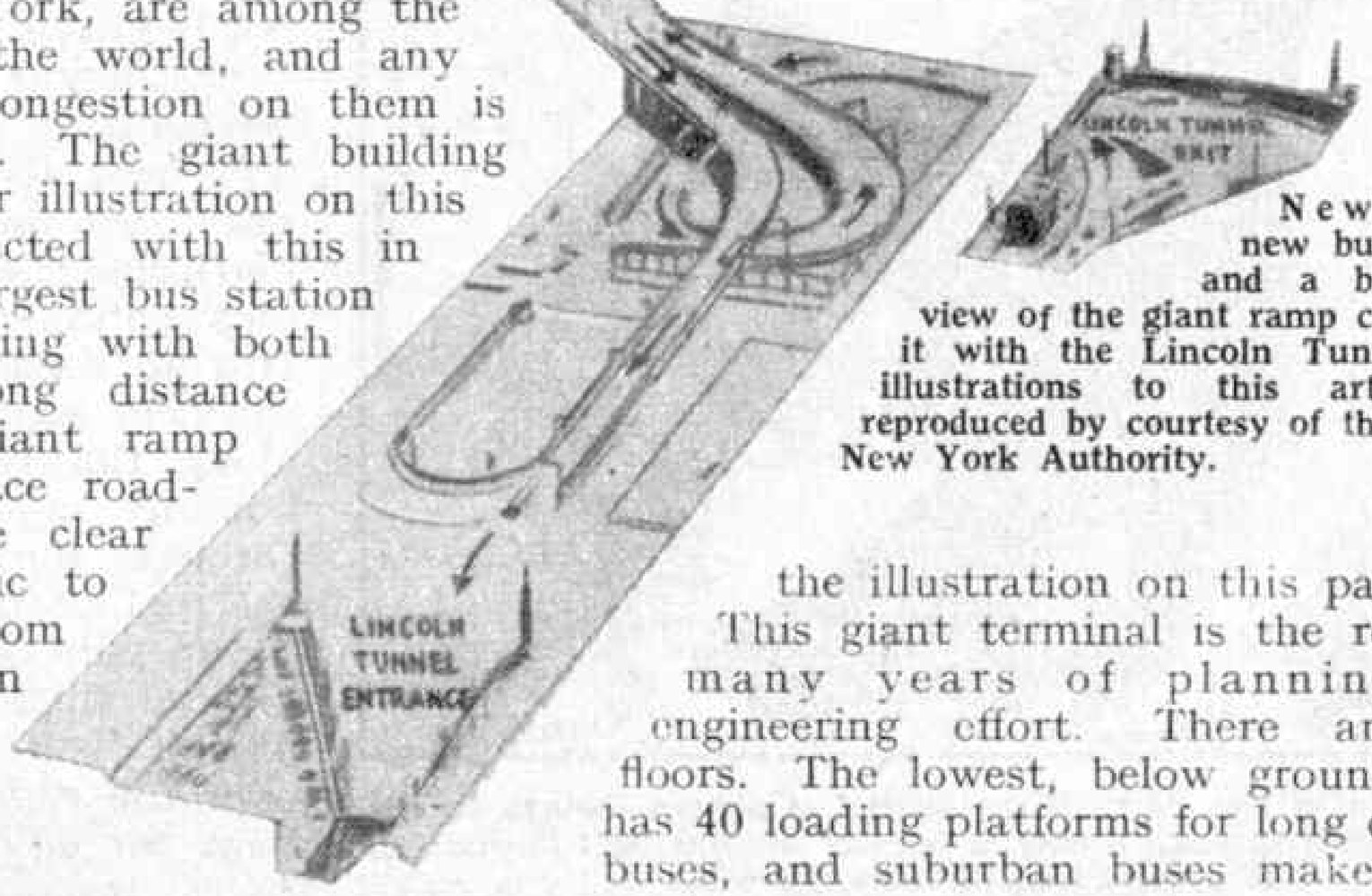
An Eskimo of the Perry River district of Arctic Canada fishing for arctic char through a hole in the ice. He has built an ice wall to protect himself from the wind.

(*Continued on page 46*)

World's Largest Bus Terminal

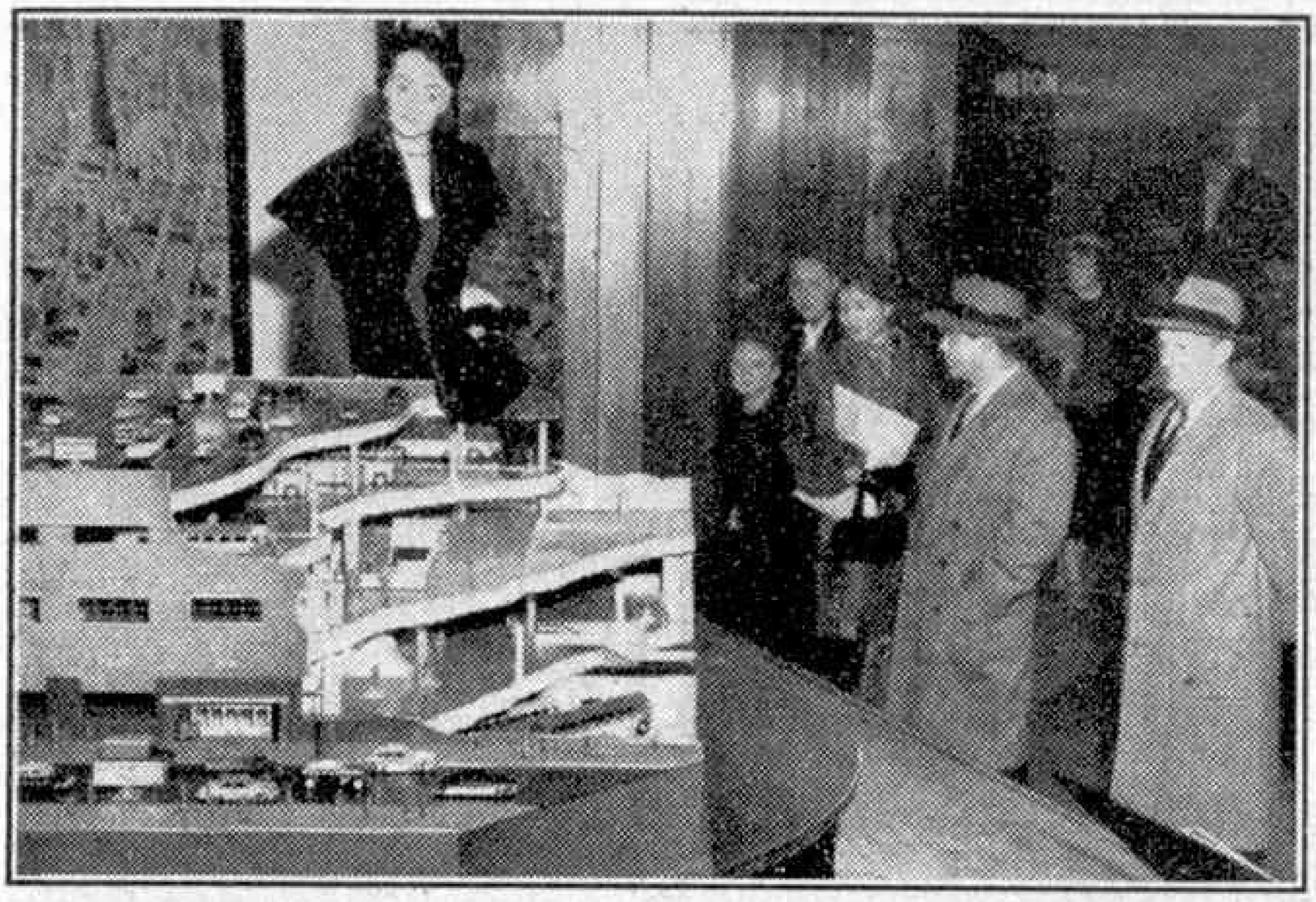
Car Park on Roof of Building

THE streets of Manhattan, the central area of New York, are among the most crowded in the world, and any way of reducing congestion on them is eagerly looked for. The giant building shown in the upper illustration on this page has been erected with this in mind. It is the largest bus station in the world, dealing with both surburban and long distance vehicles, and a giant ramp striding over surface roadways carries these clear of the city's traffic to the entrances and from exits of the Lincoln Tunnel, the twin tubes of which pass under the Hudson River, which is seen in the background of the illustration on this page.



New York's new bus station, and a bird's eye view of the giant ramp connecting it with the Lincoln Tunnel. The illustrations to this article are reproduced by courtesy of the Port of New York Authority.

This giant terminal is the result of many years of planning and engineering effort. There are four floors. The lowest, below ground level, has 40 loading platforms for long distance buses, and suburban buses make use of



A cutaway scale model of the New York bus station, showing the main and suburban concourses, with the long distance bus level below and above them the suburban bus level, reached by the ramp. The roof of the building is the car park.

71 berths on the third floor. There are also unloading platforms for incoming buses and the peak capacity of the terminal is 570 suburban and 165 long distance buses an hour.

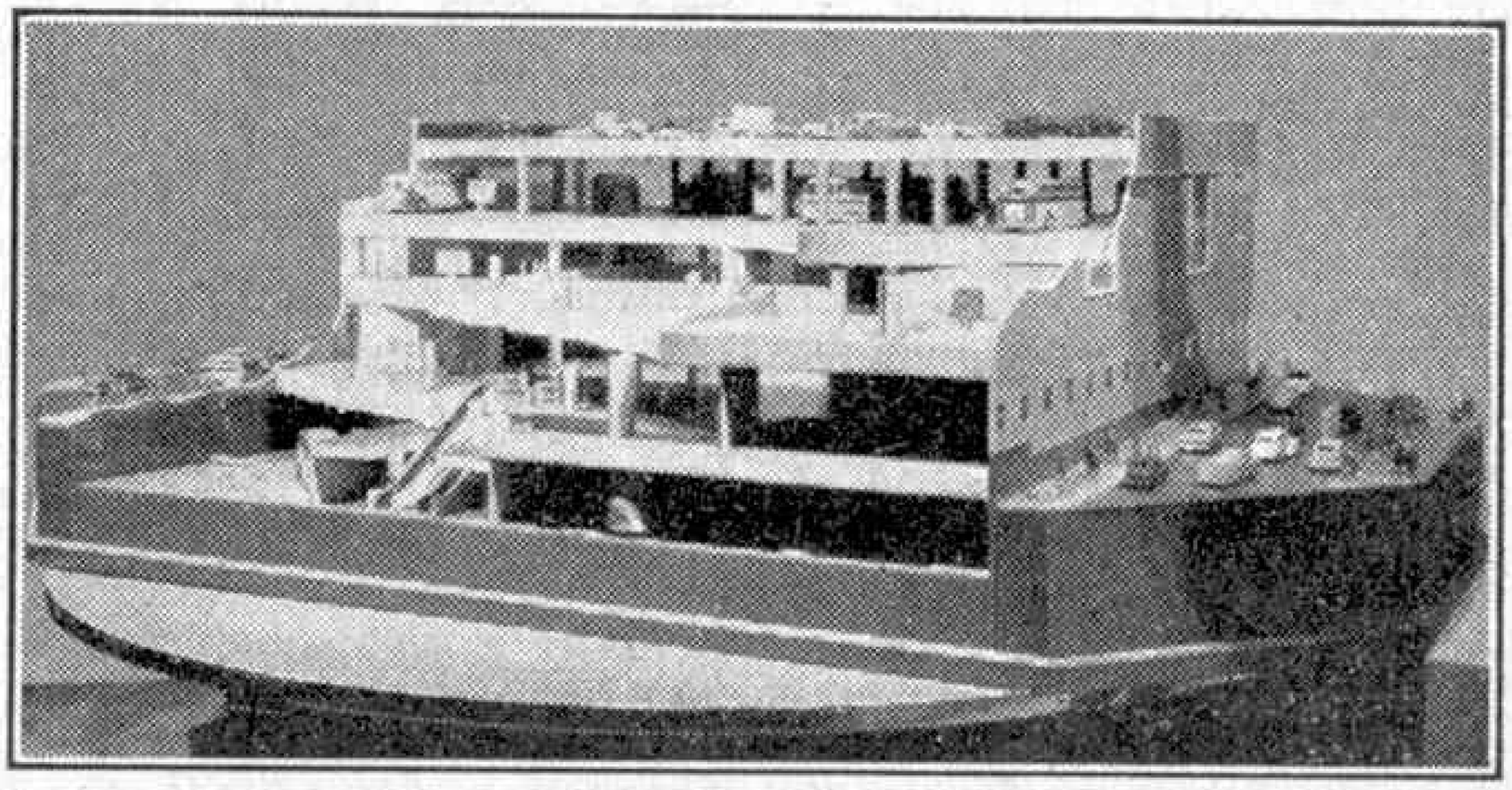
The storeys in between the bus levels are magnificent concourses for the bus passengers, with ticket offices, shops, and restaurants, and an air-conditioned waiting room. The main concourse is at street level and that for suburban passengers above it. All floors are connected by high speed escalators that carry passengers quickly to and from their loading and unloading stations.

The roof of the building also is pressed into service. It provides parking space for over 450 private cars, which reach it by the ramp connecting directly with the Lincoln Tunnel and with the streets of the city.

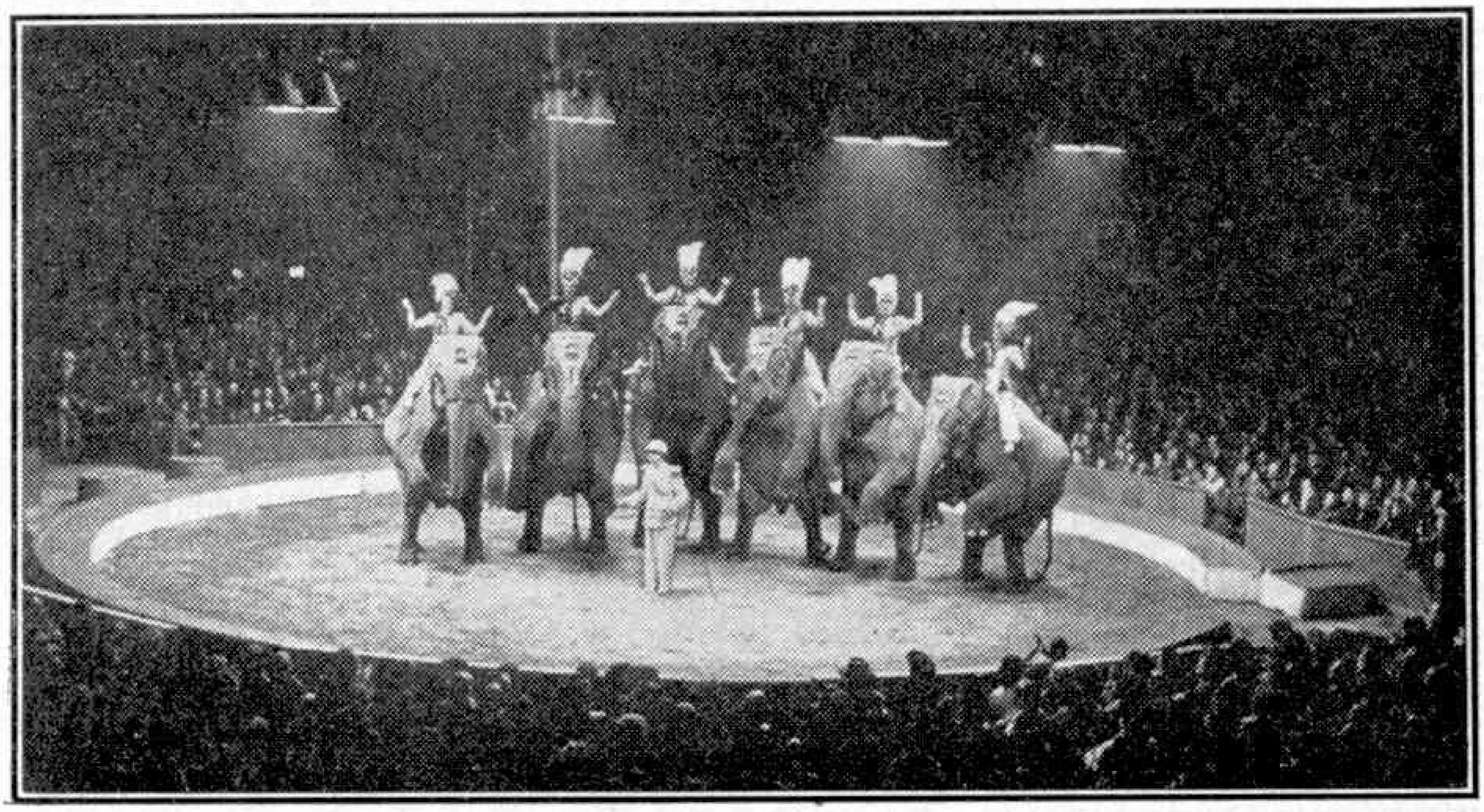
The bus station itself is 800 ft. long and 200 ft. wide, with a height of 62 ft. In it there are two miles of roadways, and the roof parking area is three acres. Over 9,000 tons of structural steel, 2,000 tons of re-inforcing steel and 25,000 cubic yds. of concrete went into its construction, with 2,500,000 bricks and large quantities of granite.

The giant ramp is perhaps the most striking feature of the great terminal. Vehicles using it avoid traffic difficulties, and suburban bus journey times are reduced from six to twenty minutes. At the Lincoln Tunnel end the ramp splits into two roadways, one leading to the entrance and the other providing connection with the exit for the benefit of incoming vehicles. Cars and buses coming from the Tunnel complete a full circle in making their way on to the ramp. At the terminal end the ramp is divided into three roadways, one leading from the terminal and a second passing into it at the bus loading level, with a central spur by which private cars reach the parking ground on the roof.

The ramp is 1,500 ft. long and is built of reinforced concrete slab on steel girders supported by 83 columns, 55 of steel and 28 of concrete. It has six miles of heating pipes in its concrete flooring, and when in operation these can melt an inch of snow an hour over its area of more than an acre and a half. The heating will be turned on in advance of expected snowstorms so that the first snowflakes to fall will meet a warmed surface.



Another view of the cutaway scale model of the bus station, showing on the left two of the 31 high speed escalators in the building.



Elephants and Chimpanzees

Which are the More Intelligent?

By Felix O'Donnell

WHICH, would you think, is the most intelligent of circus animals? Some experts think the elephant; others the chimpanzee.

Let us take elephants first and, for the nonce, rely on facts alone. The best performers among them come from Burma, doubtless because the Burma elephant is inevitably the descendant of a long line of good workers, as distinct from performers. There are many types of elephant, among them natives of India, Ceylon, Siam, Abyssinia and Africa. The biggest are from Africa, and the famous Jumbo, sold by the London Zoo to P. T. Barnum as the largest in existence, came from the "Dark Continent." The smallest, yet strongest, come from Burma. That is probably why John Gindl, trainer with the Bertram Mills Circus, has specialised in the latter type, and he has had his Burmese elephants with him since they were babies, fresh from the jungle.

The picture above shows an elephant ballet at the Bertram Mills Circus. The six animals also play cricket, waltz and play with a ball of elephantine proportions.

"With him" means everything to elephants. The trainer must practically live with them, and they must know his voice, respect him and almost love him. They are naturally affectionate, but they demand affection too. There have been times when one of the six in Gindl's charge has been naughty, just like a wilful child might be, but Gindl's voice was enough to put an end to any prank. Even the grooms—the elephants have one each—have been known to shout Gindl's name and the stables have become instantly quiet.

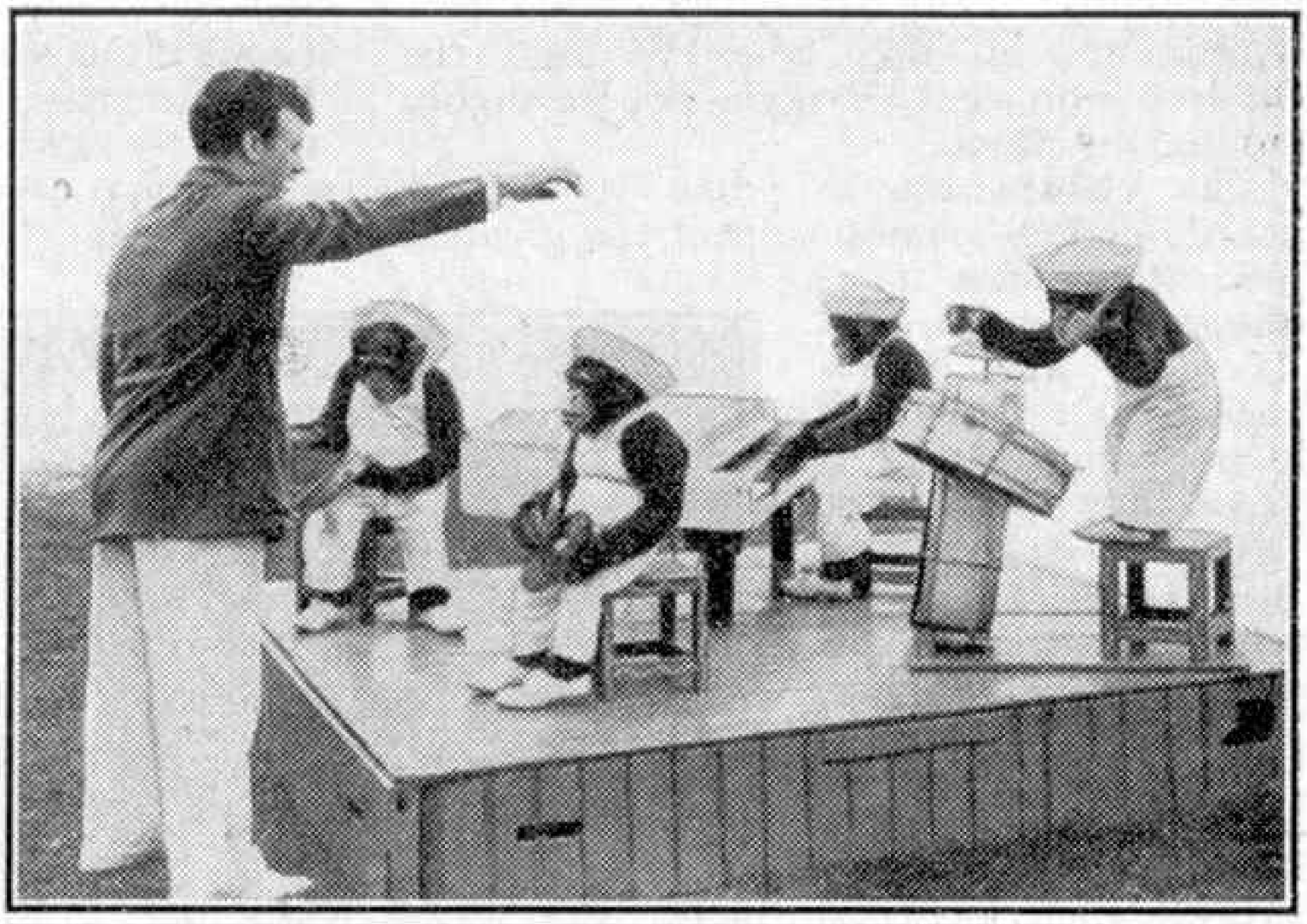
Jenny, one of the troupe, likes to have her games. She is prone to getting out of step with the others on the way to the railway station. A word from her trainer, who usually rides the leader, Lachemy, on all journeys by road, is enough to put her into step once more.

Every day the entire troupe is treated to a burnishing with a harsh wire-brush. As the grooms scrub the huge animals they behave like a baby being tickled, or splashing in the bath-tub. The elephants love it, and shew their appreciation by pointing out with their trunks the parts they would like "done" next. Immediately the treatment is completed they invariably pick wisps of hay and throw them on to their backs. That is a sign of their thanks.

At night in their stable they are accompanied by one groom. An elected

elephant of the six stands guard for a couple of hours and, at the end of that time, precisely, the guard nudges the one next to her—a signal to take over. Each in turn takes two hours duty on guard; their sleep is of about eight hours duration, but those left out on one night go on duty in strict rotation the next. One of the grooms said "You can put your watch right by them."

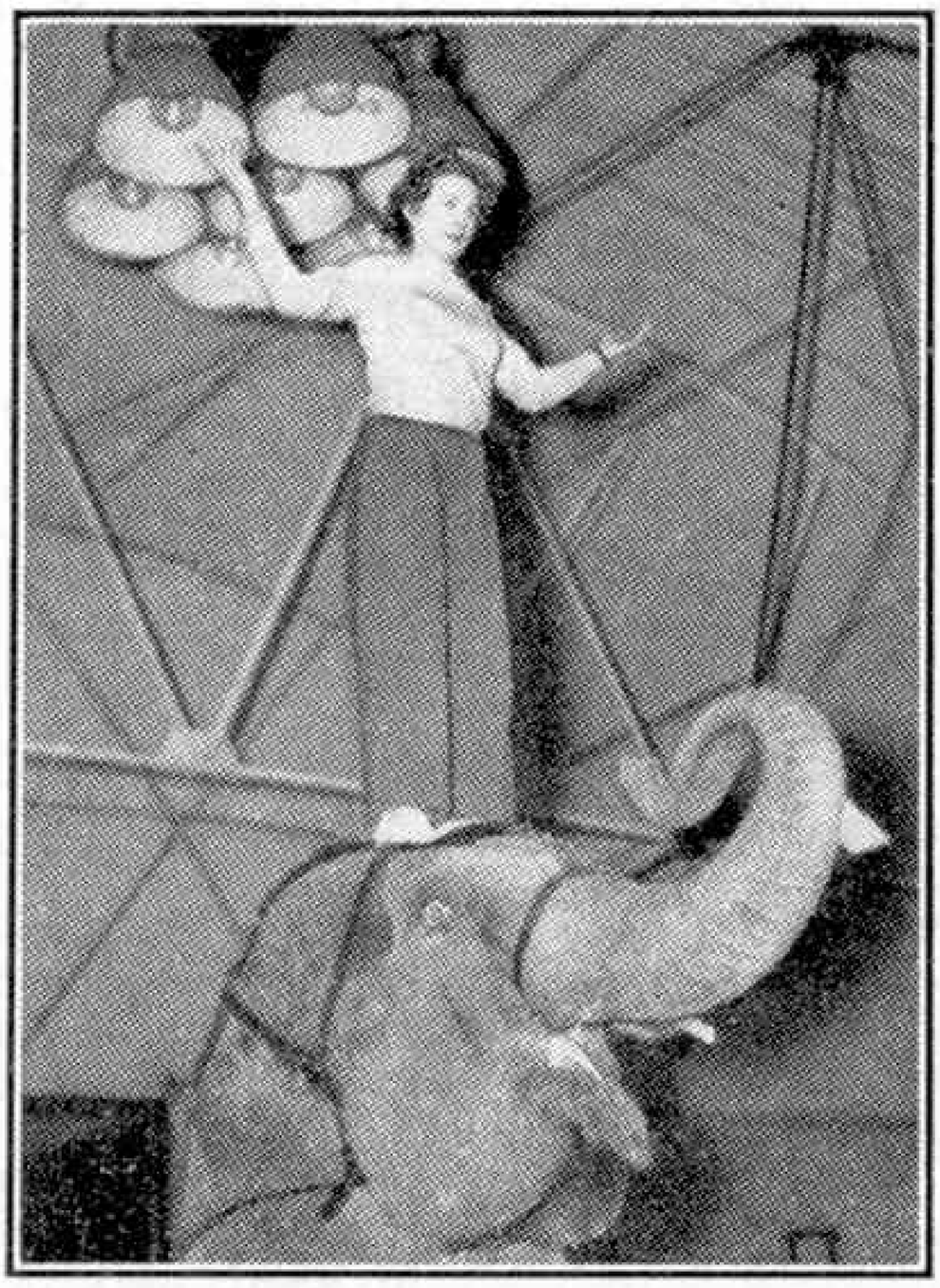
It used to be possible to buy an India or Burma elephant before the war for £600 or £700. Now it would be a second-rate animal that you would get for £1,000. The one that was shot last year at the London Zoo and his companion, who died as the result of poisoning, were valued at about £1,500 each. The six females that work with Bertram Mills Circus are worth about £25,000. They have been together for seventeen years and are fully trained, which explains their value. They play cricket, engage in a ballet, waltz and play with an outsize ball.



The chimpanzees form a dance band.

Now what are the claims of those who favour chimpanzees? These experts say of them that they are better than dogs or elephants in point of intelligence. "Chimps" are natural apes, in the sense that they copy. They are affectionate and do not reach maturity until they are six or seven years old, when they are apt to become troublesome. As in the case of the elephant, they must be in daily contact with humans.

Before reaching the dangerous age they are apt to be temperamental, but that is merely the mood of a youngster. They don't want to feel unnoticed or neglected. Some of them are apt to show off before what they think to be a positively appreciative audience. They will imitate humans in most of their actions, so chimp trainers, providing they take the trouble to understand their charges, do not find it difficult to build up a show. Even when there is no serious attempt to train them to do tricks at bidding, they may be depended upon to perform to the delight of the onlookers.



Learning to balance on an elephant's head.

Amletto Sciplini, the man who has trained the Mills' chimpanzees for Olympia this season, was born in Bagnara, Italy. He first made his acquaintance with these remarkable little animals when he was a child in North Africa, where he and a baby chimp were brought up together. He vows that he understands exactly what a chimp wants from his actions and mouthings, and he says that the animals understand him. "I simply love them," he says.

Among the tricks these chimpanzees perform is that of playing dance music on various

instruments. They are making their first appearance in this country, and the children who visit Olympia will be highly amused by them.

The chimpanzee is prone to fail in health in these climes, so that the greatest precautions have to be observed in regard to its diet and living conditions. Those of a troupe owned by a Swiss that appeared at Olympia, in London, two years ago, were wrapped in blankets after each performance, taken to their private caravan and there fed by a youth whose sole job it was to prepare their food and keep their quarters in good order. He even made their beds and arranged their anti-fly curtains. They were extremely valuable, since, among other items, they formed a jazz band. The owner would not even allow them to be photographed, lest they caught cold. Part of their quarters was fitted up as a gymnasium, and they ate their meals at table, with fork, spoon and napkin.

The six elephants of the Bertram Mills Circus, now at Olympia, in charge of Gosta Kruse, the youngest elephant trainer in the world.

At the Festival of Britain Gardens, during last summer, there was a company of chimpanzees that must surely hold the record among animals for air and road travel. They were flown from Sierra Leone to Glasgow as babies, and, within three months, journeyed to London, 426 miles, by road. They were fed on the way and never ceased to play.

The one thing elephants and chimps have in common is that they are scared of the same things—mice, small yapping dogs and mosquitoes. The living quarters of both animals are kept in a constant state of disinfection. Although chimps do a great deal of scratching they do not carry fleas. A flea cannot live on a chimp. If they scratch it is because of a natural skin-irritation.

Looking for Holes

Sound Waves Detect Air Gaps in Tyres

THE Dunlop Rubber Company is now testing rubber tyres of all kinds, for motor cars, lorries and aircraft, by passing through them ultrasonic waves, which are sound waves pitched too high to be heard by human beings. For this an instrument has been designed jointly by the Dunlop Research Centre and the General Electric Company Ltd. It reveals quickly whether there are places where the rubber and the fabric of a tyre are not perfectly bonded, and there is an air gap between them. Such faults are practically impossible in new tyres, but are common in used ones that otherwise appear sound and worth retreading.

A tyre to be tested is mounted on an arm that lowers it into a bath of water, where it can be turned round at any desired point. A quartz transmitting crystal in the head of the arm is placed within the tyre itself, and from it the ultrasonic sound waves pass to a row of six receiving crystals, so placed that they cover all paths from the transmitter through the tread of the tyre. An air gap in the path of the waves turns them away from the crystals. This is shown immediately by the appearance of a red light on the recording panel, its position indicating which of the crystals has failed to receive the transmission and so showing in what part of the tread there is an air gap.

Toll Road Relics

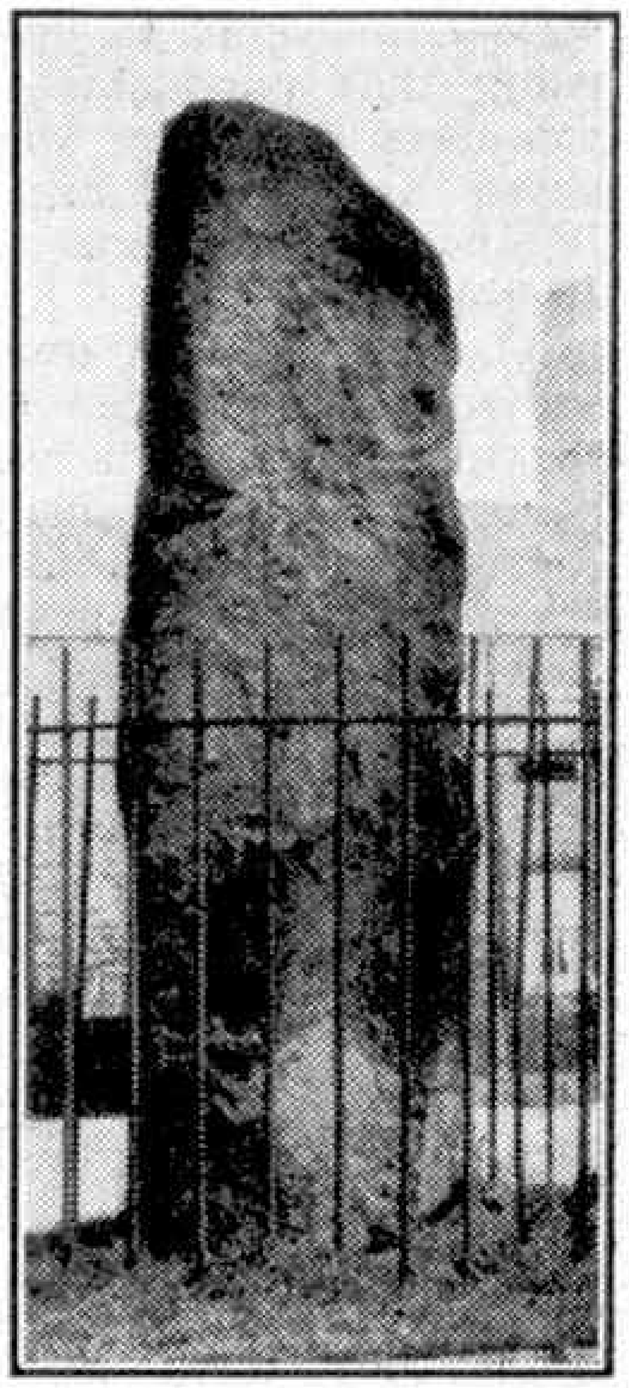
By Arthur Gaunt, F.R.G.S.

YOU do not have to travel far in Britain even to-day to find relics of our old toll roads. Indeed, a toll or "on the spot" payment is still demanded from users of our highways at some points. One remaining toll point is at Selby, where travellers crossing the 150-year-old wooden swing bridge that spans the Ouse are required to pay a small fee.

This bridge is not only the last surviving wooden one on an English main road, but it is also an engineering curiosity. The swing section rests on cannon balls, enabling it to be swung aside with greater ease, and this feature is the earliest known instance of the ball bearing!

Toll houses now in disuse or put to other uses are a fairly familiar feature of our highways. Usually they are single-storey structures resembling lodges, jutting out into the roadway and having windows that afforded a good view of approaching traffic. In the old toll days iron gates stretched across the road at these points, and they were opened only after the necessary payment had been made.

Very few of the actual gates exist to-day, but two can be seen at Keighley, Yorkshire, where they are preserved in Victoria Park. Each gate is 7 ft. wide and 5 ft. 3 in. high, and they are fine examples of the metalsmith's craft. The posts resemble cannon, and are in fact believed to have been cast at a West Riding ironworks where munitions were made early last century.

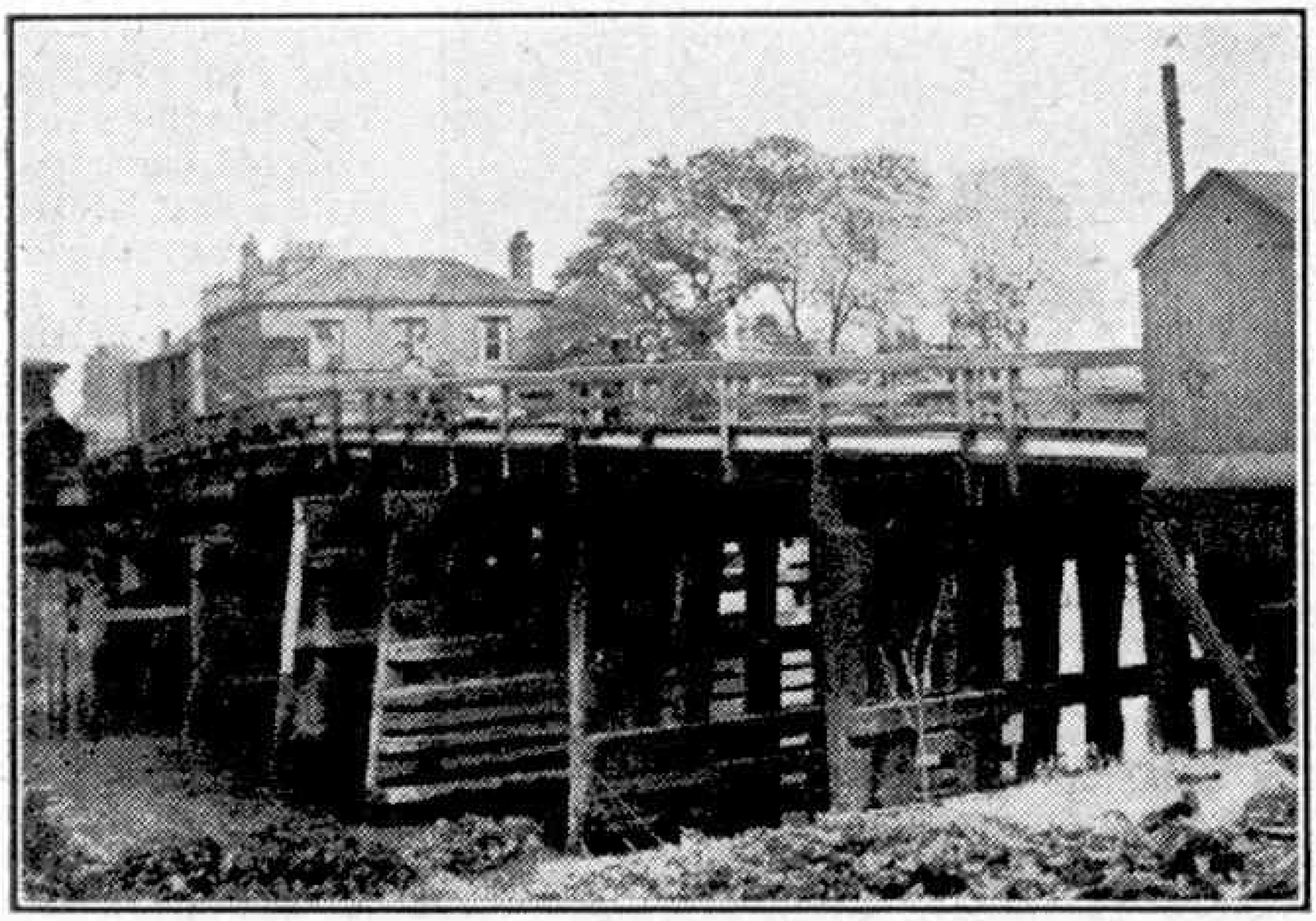


This pillar, at Harrogate, shows where the turnpike road to Leeds began.

For the history of these various toll road relics it is necessary to go back to the early days of stage coaching. Britain's roads at that time were in an atrocious state, ruts and quagmires impeding the coaches and endangering passengers. It was not unusual for a stage-coach to break an axle or lose a wheel and overturn.

These conditions are vividly revealed by the fact that in the vicinity of London itself several places were practically isolated by lack of reasonably good roads. Only 200 years ago Kensington was virtually separated from the city by an almost impassable sea of mud, while to reach the Metropolis from Horsham it was necessary to go to Canterbury and thence to the coast, and finally to arrive in London by way of the Thames!

As coaching developed, steps to remedy this handicap became essential. Parliament therefore sanctioned the formation of companies to take over stretches of highway and keep them in repair. In return the companies



The toll bridge at Selby, the only wooden bridge now remaining on a British main road. Its opening section turns on cannon balls, the earliest known instance of the use of ball bearings.

were empowered to levy a toll on traffic using that particular stretch. The only travellers exempted were royalty, people going to church, and farmers moving produce or livestock from one farm to another.

The system was sometimes abused, of course. In a number of instances it was regarded as a quick way to riches, tolls being taken but little being done to maintain the roads in reasonable condition. Again, travellers were naturally annoyed when they were called upon to pay several tolls in the course of only a few miles, and bad feeling between the gatekeepers and the public led to not a few riots.

The most famous of these clashes were the so-called Rebecca Riots in 1843, when a number of Welshmen formed a secret society to attack and demolish turnpike houses. They dressed as women and were led by a man whom they called Rebecca. Many toll roads in Wales were freed, at least temporarily, by this gang.

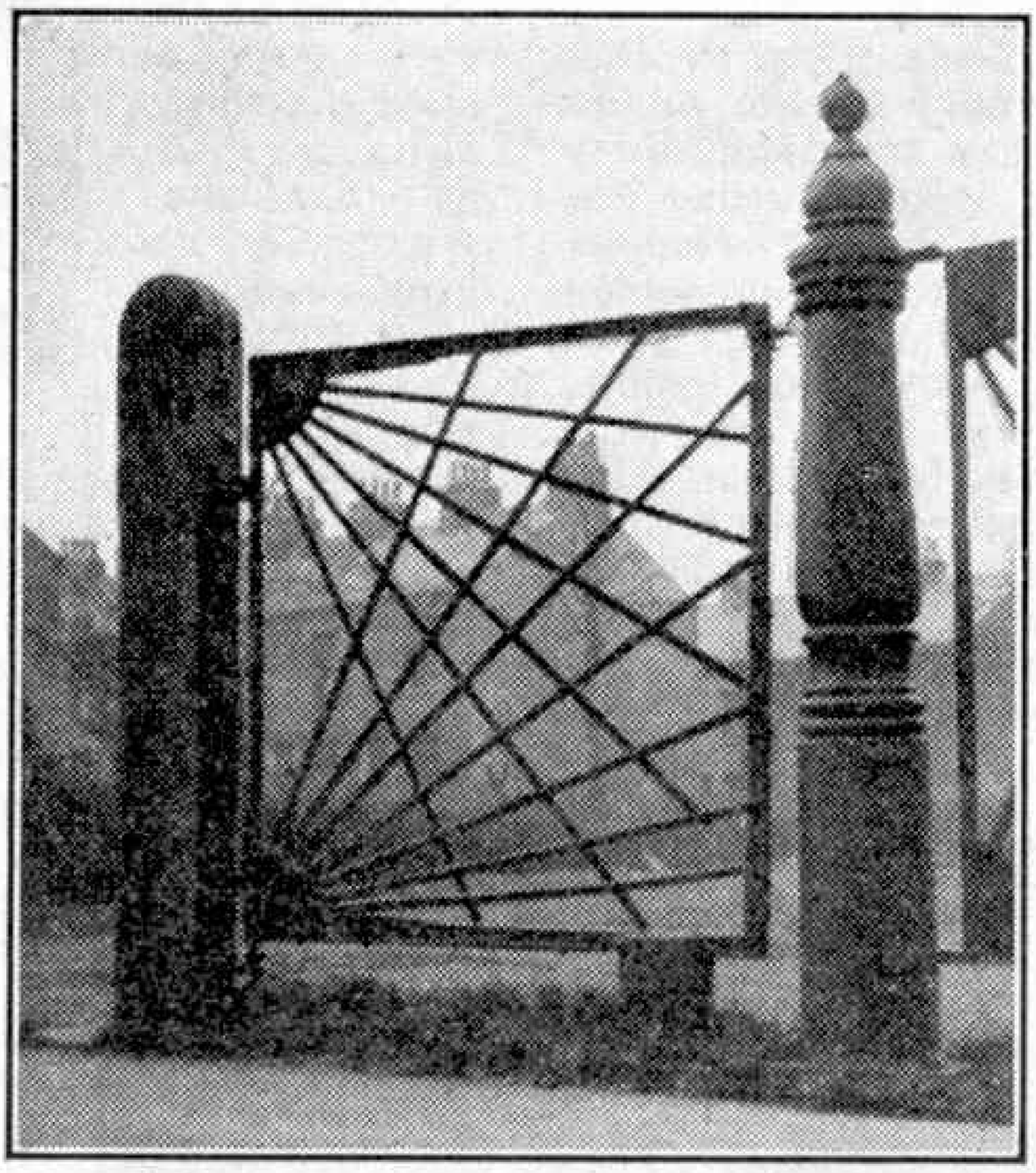
In other cases more subtle methods were adopted to outwit or annoy the turnpike gate-keepers, many of whom were surly and inclined to impose restrictions of their own. A traveller arriving at a certain Yorkshire toll gate on one occasion presented the return half of a ticket which he had bought earlier that day. This the gate-keeper refused to accept, stating that as midnight struck, the ticket, available on the day of purchase only, was now invalid.

After a heated argument, the traveller paid again, receiving a ticket for the day just dawning. But he decided that the gateman was not going to get off so easily. He went down the road, but returned as soon as he judged that the gateman would be back in bed. The latter had no option but to get up and open the gate again, and when this process had been repeated a few times, he was glad to give the traveller his money back and return to bed for an undisturbed rest.

It is recorded that at the end of the eighteenth century there were more than 1,000 toll or turnpike trusts controlling some 25,000 miles of road in England and Wales, and the revenue collected exceeded £1,500,000 a year.

Elaborate regulations were drawn up concerning the charges, the fee varying according to the type of vehicle. The amount payable for carts and carriages with wide-rimmed wheels was usually less than for others, the idea being that the broad rims did comparatively little harm to the road and even helped to keep it in good condition by rolling out the ruts.

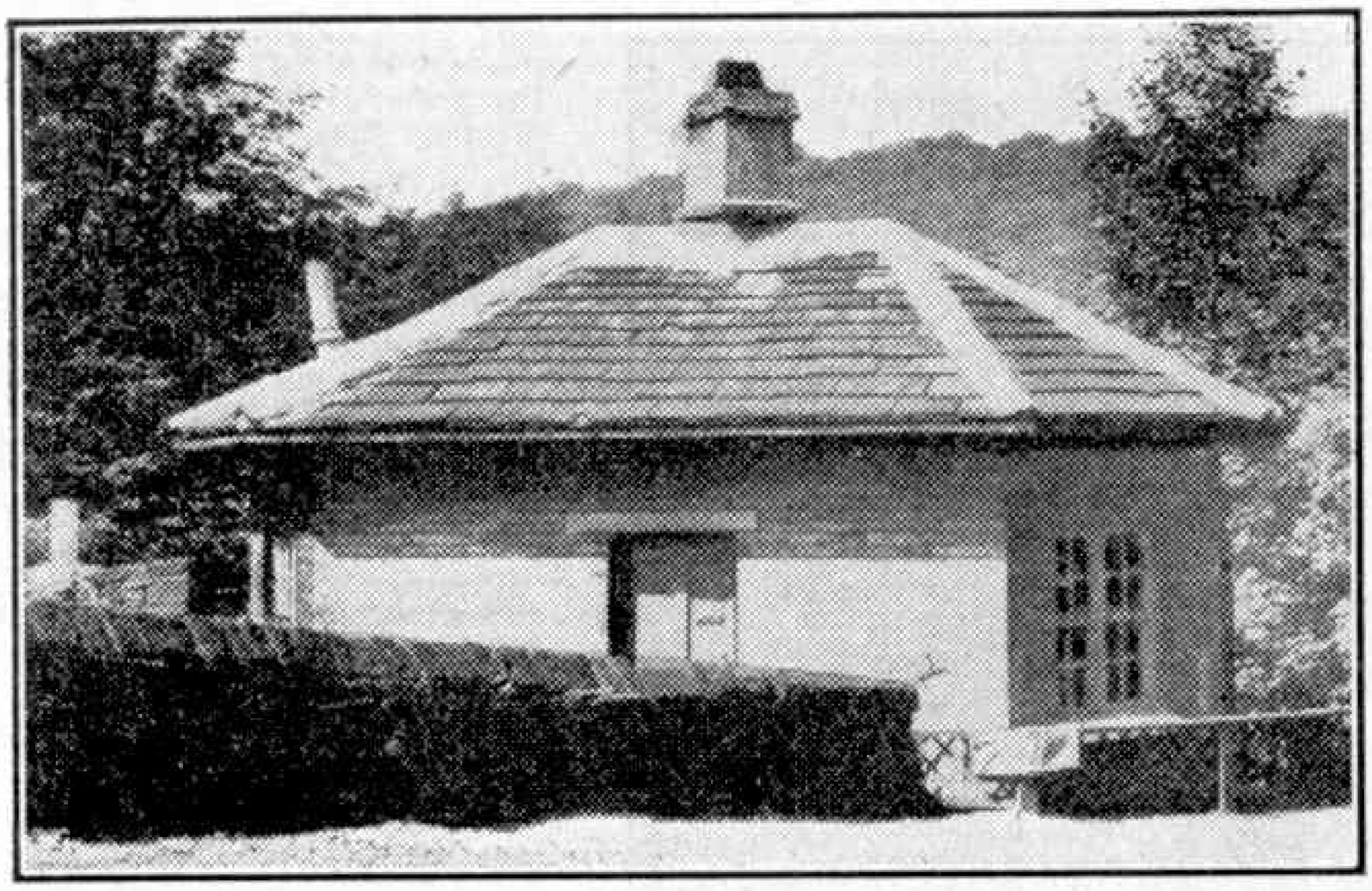
The charges were listed on a board outside the toll house, and some of these boards still survive. They make entertaining reading, vehicles never seen on our present-day roads being mentioned. Thus there are references to curricles, which were two-wheeled carriages drawn by two horses abreast; to calashes, light carriages with very low wheels; and to berlins, four-wheeled covered carriages, with a seat behind that was covered by a hood.



An old toll gate preserved in Victoria Park, Keighley.

The end of the toll road system came with the development of the railways, which took traffic from the highways and reduced the revenues of the turnpike companies to such a degree that many of them were forced out of business. A link with that particular period is provided by the reference to vehicles "propelled by steam or machinery" which appears on some of the later toll boards. Thus was the modern era of road travel foreshadowed, the coming of the motor car being preceded by that of the steam car.

Iniquitous though it was in some respects, the toll road system was useful as a means of promoting road travel, and



Copley Toll house, near Halifax. The road it commanded is now only a rough track.

it also gave opportunities to certain geniuses of civil engineering who founded our modern methods of road building. Among them were John Macadam, Thomas Telford, and John Metcalfe, the blind roadmaker.

Macadam invented the method of road construction which bears his name. He urged that the best way to prevent water from penetrating a road was to give it a surface of small broken stones to a depth of about nine inches. The pressure of traffic would then weld these irregularly shaped stones into a solid mass impervious to the weather and able to withstand the heaviest traffic.

Experiments showed this idea to be sound, and in Macadam's day and later thousands of miles of macadamised roads were built all over Britain. The system proved even more effective after the invention of the steam roller, an aid which did not exist in stage-coaching times, and it has been adopted all over the world.

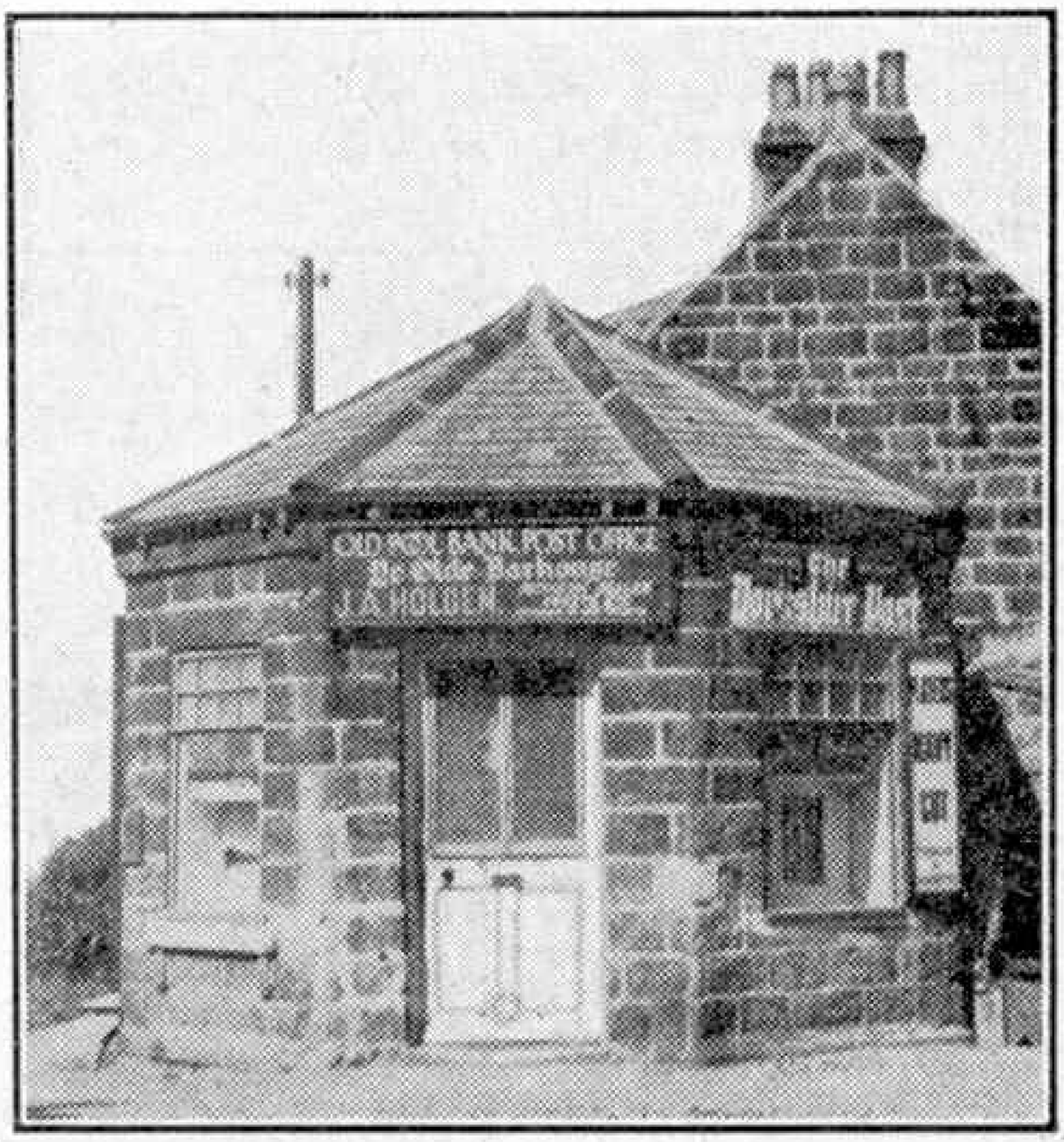
Telford, too, applied scientific ideas to road building. He stressed the need for adequate drainage, and like Macadam he surfaced his roads with small stones and chippings. But he also prepared a lower layer consisting of carefully shaped, larger stones, and he laid drains between the two layers of material.

His greatest achievement was the entire reconstruction of the London-Holyhead road, so that the Irish mails could be carried more swiftly. Altogether he built more than 1,000 miles of first-class roads, and was the architect and engineer of several fine bridges, including the Conway and Menai Suspension Bridges.

"Blind Jack," as John Metcalfe was called, preceded Telford and Macadam, and was the real pioneer of road construction in the North of England. Despite his blindness he was given a contract for building three miles of road from Minskip to Ferrensby, Nidderdale, and he made such a good job of it that he was enlisted to construct several more important turnpike roads.

A relic of one of these old toll roads is a pillar beside the Stray at Harrogate. It marks the point where the Harrogate-Leeds turnpike road began.

Metcalfe was particularly successful in carrying roads over marshy ground, and his services were often sought in this connection when other civil engineers had failed. At one time he had 400 men working on his projects. He tested the ground by walking over it and prodding it with his stick, (*Continued on page 46*)



A former toll house, on the road between Leeds and Otley, that is now a post office.

The three-seat seaplane version of the Sokol M.1, an attractive Czechoslovak light aeroplane.

Air News

By John W. R. Taylor

"Brabazon" Night Flight

Piloted by "Bill" Pegg, the Bristol "Brabazon" has made its first night flight from Filton aerodrome. The object of the flight, which lasted 50 min., was to test landing and take-off performance after dark, and half-way through the flight the "Brabazon" landed, taxied down the runway and took off again. Normal runway lighting was used.

That was not Mr. Pegg's first experience of flying huge aircraft at night. When he visited the United States in 1949 to gain experience with the B-36 bomber, all his landings and take-offs were made after dark.

Czech Light 'Plane

Although we hear little of the activities of the Czech aircraft industry nowadays, the ability of Czech designers has been proved by many outstanding flights made in their gliders and light aircraft since the war. A twin-engined, four-seat Aero 45 won the Norton - Griffiths Challenge Trophy at our National Air Races in 1949; and a whole series of long-distance flights stand to the credit of the Sokol M.1, including 20,000 miles from Prague, across Africa to Cape Town and back in 1947, and a 14,500-mile journey from Prague to Melbourne in 1949.

The attractiveness of the little Sokol is well brought out in the photograph of the three-seat seaplane version at the top of this page. Powered by a 105 h.p. Walter Minor engine, it will fly for 310 miles at 103 m.p.h. with full load, and lands at only 47 m.p.h. Its petrol consumption of 19 miles to the gallon is better than that of many cars.

Whale Watchers

The problem of where humpback whales go to in the wintertime may have been solved by crews of R.A.A.F. aircraft on training flights over the north-west coast of Australia. At the request of the National Institute of Oceanography, London, they kept track of all whales they happened to spot from the air during the months of July-September 1951, and their reports are expected to give new and valuable data on the migration and density of the whale population.

This is not the first time that aircraft have been used for whale spotting. In the winter of 1946–7 "Walrus" amphibians were used to guide whale hunters from the factory ship "*Balaena*."

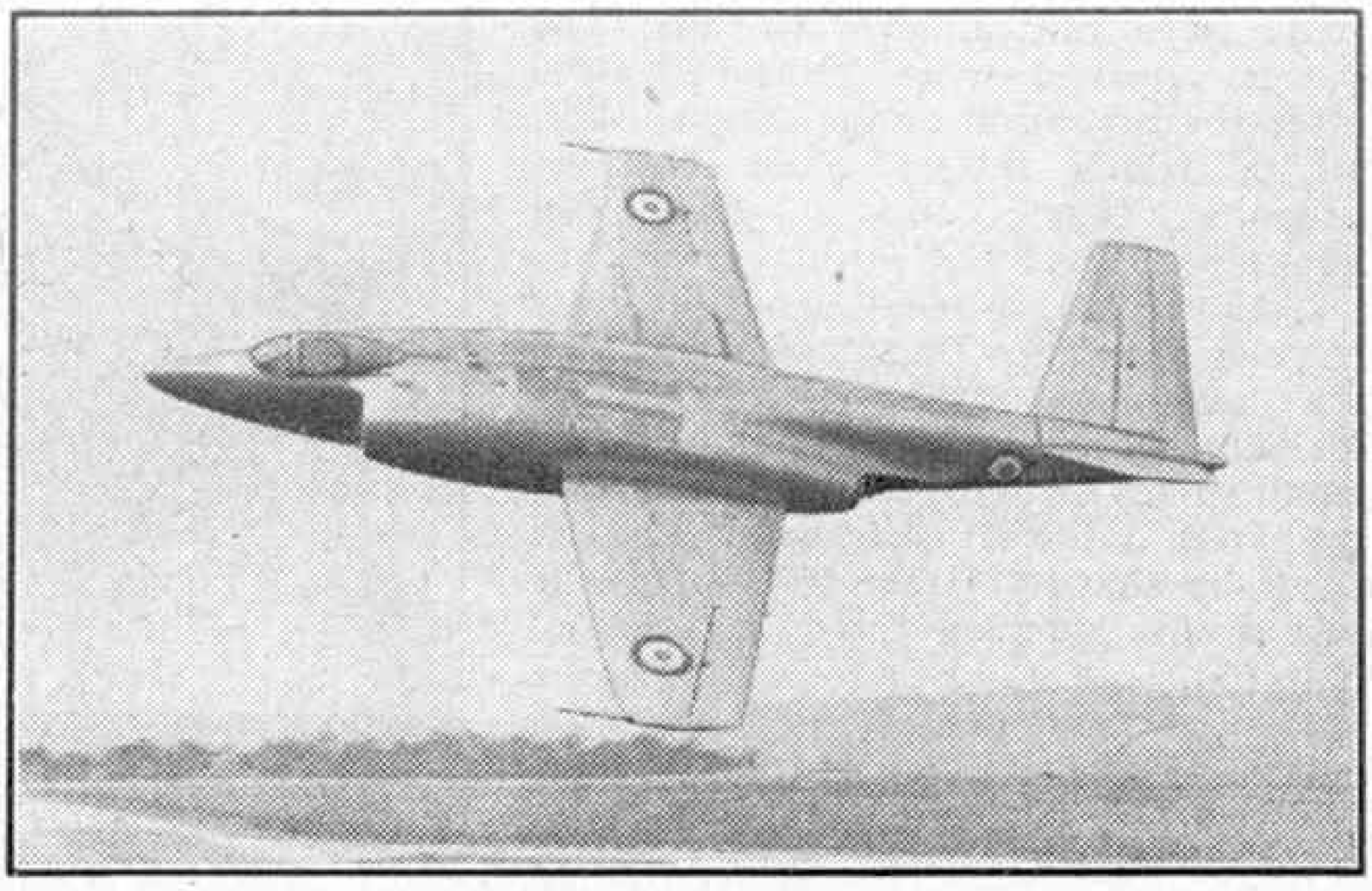
Fastest Naval Fighter

The new Supermarine 508 twin-jet naval fighter, shown below, is the most powerful carrier-based aeroplane ever built. Actual performance figures may not be given yet, but the 508's two Rolls-Royce "Avon" turbojets guarantee very high top speed, and its small, thin wings have movable "droop-snoot" leading edges which can be extended to increase lift and so reduce landing speeds to a minimum.

Another unusual feature of the new fighter is its butterfly tail, which reduces drag at no apparent cost in manœuvrability or control. American reports give the 508's armament as four 30 mm. cannon, developed from the wartime German MK 108 gun, and add that these formidable weapons will be standard on all new British fighters.

* * * *

The United States Government have paid $4 million to the British Government-owned Power Jets (Research and Development) Ltd. for the use of some 200 British patents covering the design and production of jet engines.

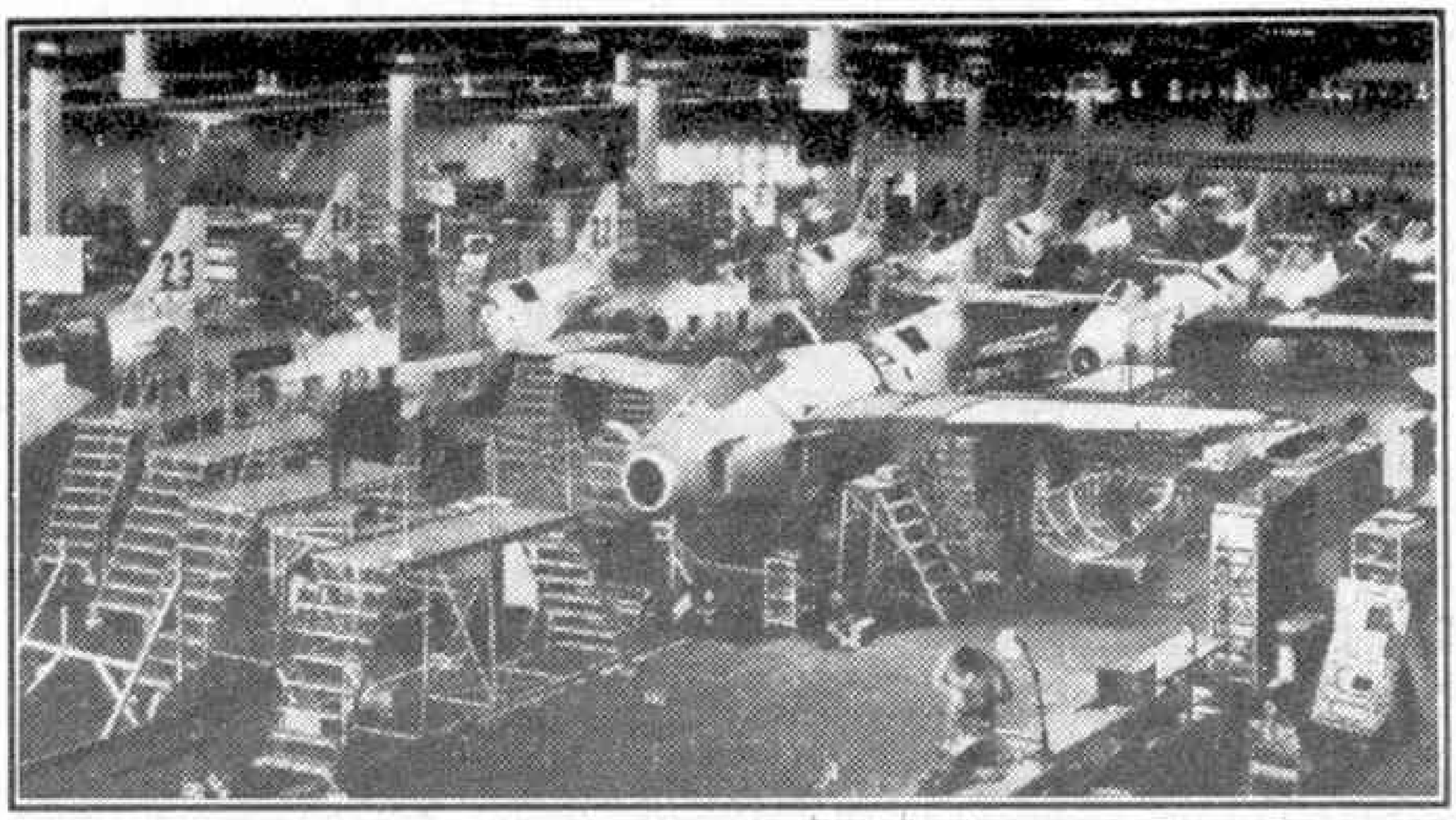


Supermarine 508 twin-jet naval fighter, the world's most powerful carrier-based aircraft. Photograph by courtesy of Vickers-Armstrongs Ltd.

Cars Exported by Air

The Rootes Group of British motor car manufacturers are sending many of their exports to France aboard Bristol "Freighters" of Silver City Airways' cross-Channel Air Ferry service. As a result, the Ferry will be kept busy through the winter season, when normal business is slack, and French customers will get their Hillman, Humber and Sunbeam-Talbot cars quicker and with less risk of damage in transit.

Silver City began to carry small numbers of export cars and motor-cycles at the end of their record-breaking 1951 summer season, during which they flew more than 13,000 vehicles across the Channel. In future, this export trade will almost certainly grow, on both the present Lympne-Le Touquet service and the new one from Southampton to Cherbourg, which Silver City plan to start soon. To cope with increased traffic, they have recently bought their eighth "Freighter."



S.A.A.B. J-29 sweptwing jet fighters in production at the Linköping plant of Svenska Aeroplan A.B., Sweden.

Sweden's Super-Fighter

Despite its tubby shape, which has earned it the nickname of "Flying Barrel," the S.A.A.B. J–29 jet fighter is one of the fastest aircraft in service with any air force. Few details of its performance or equipment may be given, except that it is powered by a Swedish-built de Havilland "Ghost" turbojet and is armed with four 20 mm. cannon and underwing rockets. Reports credit it with a top speed of more than 650 m.p.h. and a high degree of manœuvrability.

The J–29 is in large-scale production in S.A.A.B.'s underground factory at Linköping, where the company are also developing a hush-hush all-weather jet fighter of advanced design.

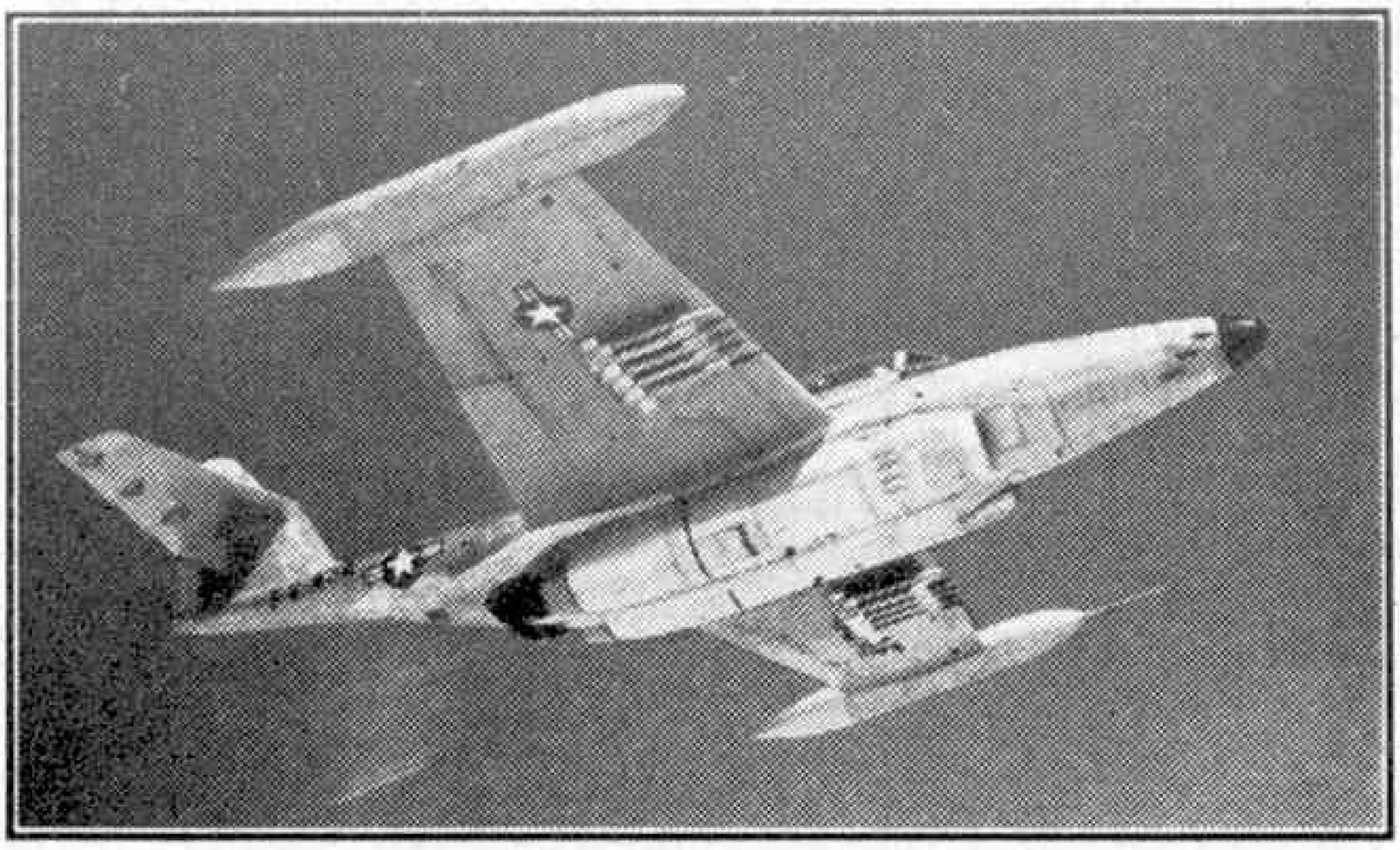
£1,250,000 Contracts

Following a recent contract to move Service personnel by "Viking" aircraft between various air stations in the Mediterranean area, Airwork have been awarded a further trooping contract to fly some 9,000 people a year between the United Kingdom, Egypt and the Middle East. To meet their new commitments, which are worth over £1,250,000, the company are buying at least four Handley Page "Hermes" 4 air liners from B.O.A.C.

New Helicopters

Two revolutionary helicopters are being developed in America. The first is a giant "flying crane" that the McDonnell Company are building for the U.S. Navy, and which will be able to lift loads of up to 16 tons. It will have a single three-bladed main rotor with small jet-engines at each rotor-tip, and has been designed mainly to remove crashed aircraft from carrier deck to repair ship, clearing the deck quickly for other aircraft to land.

At the other end of the size scale is the "Pinwheel," which the Rotorcraft Corporation are developing for the U.S. office of Naval Research. It weighs less than 100 lb. and is worn rather than sat on by its pilot! It consists basically of a steel tube with a small seat at one end and a two-bladed rotor at the other. Clamped to the tube is a fuel tank, which supplies two throttle-controlled, liquid-fuel rockets carried on the rotor tips; and the "Pinwheel" is completed by a control column, hanging from the rotor head, and a "weather vane" rudder. It is intended to replace the motor-cycle in military operations, and for surprise day and night attacks.



The "Scorpion" F-89, the U.S. Air Force's new standard all-weather interceptor fighter. Photograph by courtesy of Northrop Aircraft, Inc., U.S.A.

The "Scorpion"

The Northrop F-89 "Scorpion," shown on this page, gets its name from its slim upswept tail; but, unlike its animal namesake, its sting is at the other end, in the shape of six 20 mm. cannon mounted in its nose.

The "Scorpion" was the first American aircraft designed from the start as an all-weather fighter. It carries a crew of two, extensive radar search equipment in its nose, and is powered by two Allison turbojets. With full load, including wing-tip fuel tanks and underwing rockets, its top speed is over 600 m.p.h.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"THE ANIMAL'S WORLD"

By Doris L. Mackinnon, D.Sc., LL.D. (Bell. 18/6)

The new and revised edition of Dr. Mackinnon's book is neither a manual of biology nor a work on nature study. What it does is to combine the best of both in that on the one hand it deals with the structure of animals and the wonderful processes by which they live, and on the other hand it gives absorbingly interesting details of their daily lives and habits.

Following the chapters of the book soon gives an idea of how this complete view of the animal's world is attained. We learn at an early stage what is meant by life and what an animal is, after which we turn to the divisions of the animal body, the skeleton and muscle. This brings us to movement. Why this should be necessary or desirable is explained, after which we see how land animals get over the ground, how others move in water and others in air, in each case learning much about these movements beyond their mere mechanics. For instance, when the book comes to deal with the muscles of a bird we learn why its "arm" is so skinny and its breast so plump, and why a sleeping bird does not fall off its perch. Creepers and crawlers come next. Here the three different ways in which animals without limbs move are explained—the worm's way, the snail's way, and the snake's. The last of these is neatly compared to punting, for the snake digs its ribs into the ground, on which it secures a grip with the edges of its scales.

By this time we have got a fairly good idea of the animals of our community, but we still have to learn exactly how they live. This is explained in successive chapters describing how animals breathe, feed, see, hear, smell and taste, and how they talk to each other. Every page is full of interesting revelations here and in further chapters on brain and nerves, the childhood of animals and the manner in which they live together. There is also much about plants in the book, and rightly so, for without them there would be no world of animals.

The book indeed is a wealth of learning, expressed beautifully in a way that will make it attractive to all boys and girls who are interested in any way in animals. It is well illustrated with excellent reproductions of photographs and drawings in the text, and can be thoroughly recommended.

"MODEL RAILWAY POWER SIGNALLING AND POINTS OPERATION"

By E. F. Carter (Percival Marshall and Co. Ltd. 9/6)

Power operation of their points and signals has long been the aim of many miniature railwaymen, but the troubles associated with some of the earlier systems of power working have no doubt prevented many from carrying out complete installations or from obtaining the best results.

In the present book the author, in his painstaking manner, gives essential details for the benefit of the model railway engineer who wants to make and fit up a satisfactory system of this kind, using simple and inexpensive materials. He covers a great deal of ground, from elementary relays for signal and points operation to fully automatic working of trains by means of light cells, and the construction of a whistle unit for realistic sound effects.

The model railwayman who likes to make gadgets to improve the realism of his electric layout will here find plenty of encouragement, both in text and in the accompanying diagrams and sketches, to go ahead with schemes for using power for his signals and points.

"THE BOYS' BOOK OF BRITISH RAILWAYS"

By O. S. Nock (Ian Allan Ltd. 9/6)

Mr. Nock has written an excellent book for the youngster who wishes to know more about the railway system of this country and its working than he can gather by ordinary observation, or even a fair amount of reading. He is well known for his railway writings, and as an engineer closely associated with railway work he is able to take the reader behind the scenes, as it were, and to see something of the organisation that keeps traffic on the move. This he has done without losing any of the romance of railways, or spoiling their fascination for all boys.

The book begins with a general survey of the British Railway system and then, logically, deals with the permanent way and its maintenance. Well-known trains, locomotive design and locomotives generally are described, and coaching stock also receives well-deserved attention.

It is when he is dealing with the organisation of traffic control and its importance to railways, and in describing signalling and signals, that the author seems to be most in his element. The chapter dealing with tasks on the line offers plenty of variety, and the working of local trains and that of express passenger services are considered in due perspective. Various tables giving railway facts and figures, such as regional boundaries, longest tunnels, notable gradients and some locomotive dimensions, add to the interest of the book.

Illustrations are plentiful and include some striking shots of modern and not-so-modern engines. The locomotive footplate drawings included will be studied with interest by the engine fan, as will the line sketch of a London Midland 4–6–2, the external parts of which are specially indicated. There are several colour plates, and the attractive cover illustration shows B.R. 4–6–2 "*Britannia*" in full cry.

"MOUNTAIN HOLIDAY"

By Margaret West (Museum Press. 6/-)

A pleasant story, with a holiday in Wales as the central feature. Three boys and a girl, with a sheepdog, are enjoying this holiday, and in their expeditions they soon realise that there is more excitement ahead than they had bargained for. There is mystery too, in the form of a boy, met on the mountains in a mist, who runs away from them in terror. Then comes a burglary and at great speed the holiday-makers find themselves drawn into the mystery. By courageous action they recover the stolen goods, free the frightened boy from the danger that threatens him, and lead a couple of dangerous characters into the arms of the police.

The book has a coloured frontispiece and provides thrilling reading.

"ARIZONA ROUND-UP"

By Eric Leyland (Brockhampton Press. 6/-)

Here is a first-class "Westerner" that readers of the "*M.M.*" will appreciate. One son of the owner of a ranch that is coveted by an unscrupulous gambler falls completely under the influence of the latter, a state of affairs that brings back his younger brother from the East, to make a startling entry into the ruthless game that is being played. He could scarcely hope to emerge safely by dint of his own efforts from the ranch warfare that breaks out, but his stand arouses other ranchers, and the right kind of help too comes from three prairie rangers, sent into the district by the Governor of the State to clean things up.

There are thrills galore in the story, with many strange turns of fortune.

"TRANSATLANTIC PADDLE STEAMERS"

By H. PHILIP SPRATT, B.Sc.
(Brown, Son and Ferguson. 7/6)

The first steamer to cross the Atlantic eastward was the American auxiliary "*Savannah*" in 1819, part of the voyage only being made under steam. The first vessel using steam on the Atlantic in a westerly direction was a British warship built for the Earl of Dundonald at the time of the war of liberation in Chile.

Both vessels, pioneers of the Atlantic service under steam, were driven by paddles, and paddle steamers maintained the services for many years. The stories of these vessels are excellently told in Mr. Scott's book, which carries readers through the three stages of the Atlantic paddle ferry. The first of these stages was the period of the spasmodic pioneers, in which steam was used as an auxiliary; the second that of sustained steam power, an era commenced by the "*Sirius*," which in 1838 for the first time crossed the Atlantic under steam alone; and the third, that of the Atlantic paddle ferry in its full sense, beginning with the entry on the scene of Samuel Cunard, the founder of the line that bears his name. His first vessel was the paddle steamer "*Brittania*."

In all Mr. Spratt describes 32 famous transatlantic paddle steamers in considerable detail. He has gone thoroughly into his subject and gives as many authentic details as possible of the vessels themselves, with the stories of their performances. There are excellent illustrations of several of the more famous of these ships, reproductions of contemporary prints or pictures of models at the Science Museum, London. Tables of historical and technical data and a carefully compiled index complete an excellent record that will be appreciated by all interested in the romance of the Atlantic ferry.

"CASH FROM YOUR CAMERA"

By ARTHUR NETTLETON, F.R.G.S.
(Iliffe and Sons. 7/6)

Mr. Nettleton is an experienced journalist, who knows the subjects on which he writes, and this is evident in his book, now in its second edition. This will be a valuable guide to those who hope to profit from their skill in photography. In it he surveys the openings that are available for the amateur turning to this side of his hobby, and his story is made complete by sections dealing with the writing and submitting of articles.

Such matters as problems of payment, copyright, routine and filing also are dealt with, and the value of the book is increased by the inclusion of reproductions of 22 photographs from the author's collection that have already sold well.

"THRILLS AND SPILLS"

By ERIC LEYLAND (Ward, Lock. 8/6)

Mr. Leyland's book is described as one for "the modern boy with a love for all sports with speed and action." It deals with half a dozen high speed sports, speedway riding, aircraft racing and gliding, cycling, motor cycling, speed on the ice and motor racing, and certainly gives a good idea of the attractions they have to offer,

In each section readers can re-live a host of thrill-packed adventures in its story of the sport concerned. The treatment is practical, with interesting detail from actual experience where possible. For instance, in dealing with gliding the successive steps by which a beginner becomes the possessor of A, B and C certificates are explained. There are also stories of famous stars in the various pursuits, with information on records, and in certain instances the stars themselves have helped by contributing details of their careers. Notable examples of this are Reg Harris, the world's sprint champion cyclist, and Eric Chitty, the famous speedway ace.

The book is of large size and has four whole page plates in colour, illustrating speed on the ground and in the air, with many drawings in the text.

"THE ELECTRIC CURRENT"

By P. DUNSHEATH, C.B.E., D.Sc.
(Bell. 18/6)

The Christmas Lectures of the Royal Institution have long been famous. There have been more than 120 of these in the series, which was founded by Michael Faraday, all specially prepared for boys and girls, and illustrated by many striking experiments devised as part of the plan for presenting their subjects in an attractive and interesting way.

It has now become the practice to present the Lectures later in book form, and Dr. Dunsheath's account of the electric current is based on those he gave in 1949–50. Like previous volumes of this kind, it is remarkable for the clear and simple explanations in broad outline that it gives of the chosen topic.

All who read the book, like those who had the privilege of attending the Lectures on which it is founded, can realise the truth of the author's claim that the coming of our modern electrical age is really a fascinating story of adventure. This started over 2,000 years ago in ancient Greece, when it was discovered that rubbing a piece of amber gave it the power of attracting light articles. Later Franklin experimented with real lighting, and Volta made the first electric battery. Then the pace quickened rapidly, with the work of Faraday and his successors, and how far we have now come is revealed in Dr. Dunsheath's story, and in the experiments that he describes. Throughout he gives homely illustrations to explain technical details, and the reader has no difficulty in following him and in seeing how currents are produced and measured, and put to good use in industry and the home.

As an introduction to the study of modern electricity the book is splendid, and it will be delightful also to all, young or old, who wish to know something of this mighty modern power. It is well produced, and excellently illustrated. There are 22 plates, their subjects ranging from an electric crane lifting a military tank to the machinery of giant power stations on the one hand and to home applications on the other, with many drawings in the text, each making perfectly clear some point in the story that the author has to tell.

"SECRET OF THE WAVING BAMBOOS"

By ARTHUR WATERHOUSE
(Brockhampton Press. 6/–)

Here is a first-rate thriller. Tony and Ann Gayford, accompany their father, Professor Gayford, on a journey into the bandit country on the borders of China and Tibet, in search of an elusive panda. On the ship to China a young Chinese stowaway is added to the party, and on arrival at Shanghai two young cousins and a native hunter and guide join the expedition.

From Shanghai the expedition travels up the mighty Yangtse River, and the dangerous nature of the quest is brought home to the children when, on the fourth day of the journey, the ship is attacked by river pirates. This is the beginning of a rapid succession of perilous adventures that end only when the expedition accomplishes its object.

Exciting line drawings illustrate the text.

"STRATFORD ADVENTURE"

By AGNES FURLONG (Harrap. 7/6)

This exciting story will be of special interest to "*M.M.*" readers who like Shakespeare's plays, as the scene is set in Stratford-upon-Avon. It concerns a plot to steal a copy of the First Folio of "*Hamlet*." The children who become involved in this dark scheme are members of a school party of boys and girls on a visit to the town. Four of them are billeted in a cottage just outside the town, where they make the dramatic discovery that brings to light the plot to steal the Folio and substitute a forgery. There are exciting times before the matter is satisfactorily cleared up and the children return to school, after a holiday that they will always remember.

Sport on Snow and Ice

Winter Thrills in Mountain Regions

By W. H. Owens

THE fastest and most exhilarating of land sports entirely independent of engine power are those enjoyed on snow or ice. One of these is ski-ing, which offers the individual sportsman rare delights, especially in high mountain country, where there are tours in endless variety and long, unbroken downhill runs. Nowadays it is practised in every part of the world wherever there is enough snow.

Except in Scotland, our British winter climate does not permit very much in the way of seasonable sports. Good ski-ing certainly is enjoyed most years on the higher Scottish hills, notably the Cairngorms and Grampians, though even there the season is likely to be a short one. But in Switzerland, France, Norway, the Austrian Tyrol and elsewhere on the Continent, winter sports are a firmly established institution, with a full season that usually lasts from Christmas until Easter.

This year the winter Olympic Games are to be held in Oslo, Norway, for the sixth time. Between the 14th and the 25th February more than a thousand athletes representing thirty nations will gather there for exciting contests in downhill and slalom ski-racing, ski-jumping, cross-country ski-ing, bobsleigh racing, speed skating and ice hockey. Next month indeed Oslo will be a meeting-place for all the leading figures in the international ski-ing and skating world.

Norway is the fitting background for these winter Olympics, for that country is the home of the ski and the birthplace of ski-ing as a sport. The modern ski is a development of the various forms of snowshoe used by the Scandinavians ever since prehistoric times. In those northern lands, where snow covers the countryside for months on end, skis became the natural means of transport and the people displayed great skill in the use of them.

Ski-jumping at St. Moritz, Switzerland. The illustrations to this article are reproduced by courtesy of the Swiss National Tourist Office.

It was not until about 1860 that skis were first used for sport. The Telemark turn, one of the important and most graceful movements in ski-running, takes its name from the mountain province of Norway where the sport began. Some thirty years later the world's first ski tournament was staged on the Holmenkoll hill in Oslo, the scene of some of the forthcoming Olympic events.

From Norway the art of ski-ing, with its development ski-jumping, spread right across Europe, and also to Canada and the United States, where it enjoys immense popularity now. Since the early years of this century, however, Switzerland has achieved the leading place among Europe's winter sports centres, no doubt because the Alps offer ideal conditions and unrivalled ski runs against a superb scenic background. Many years before the ski was ever seen on Swiss slopes, skating and tobogganing were enjoyed in one or two of the older

A champion's intense concentration in a slalom race, run on a flagged downhill course with varying gradients and turns made as difficult as possible.

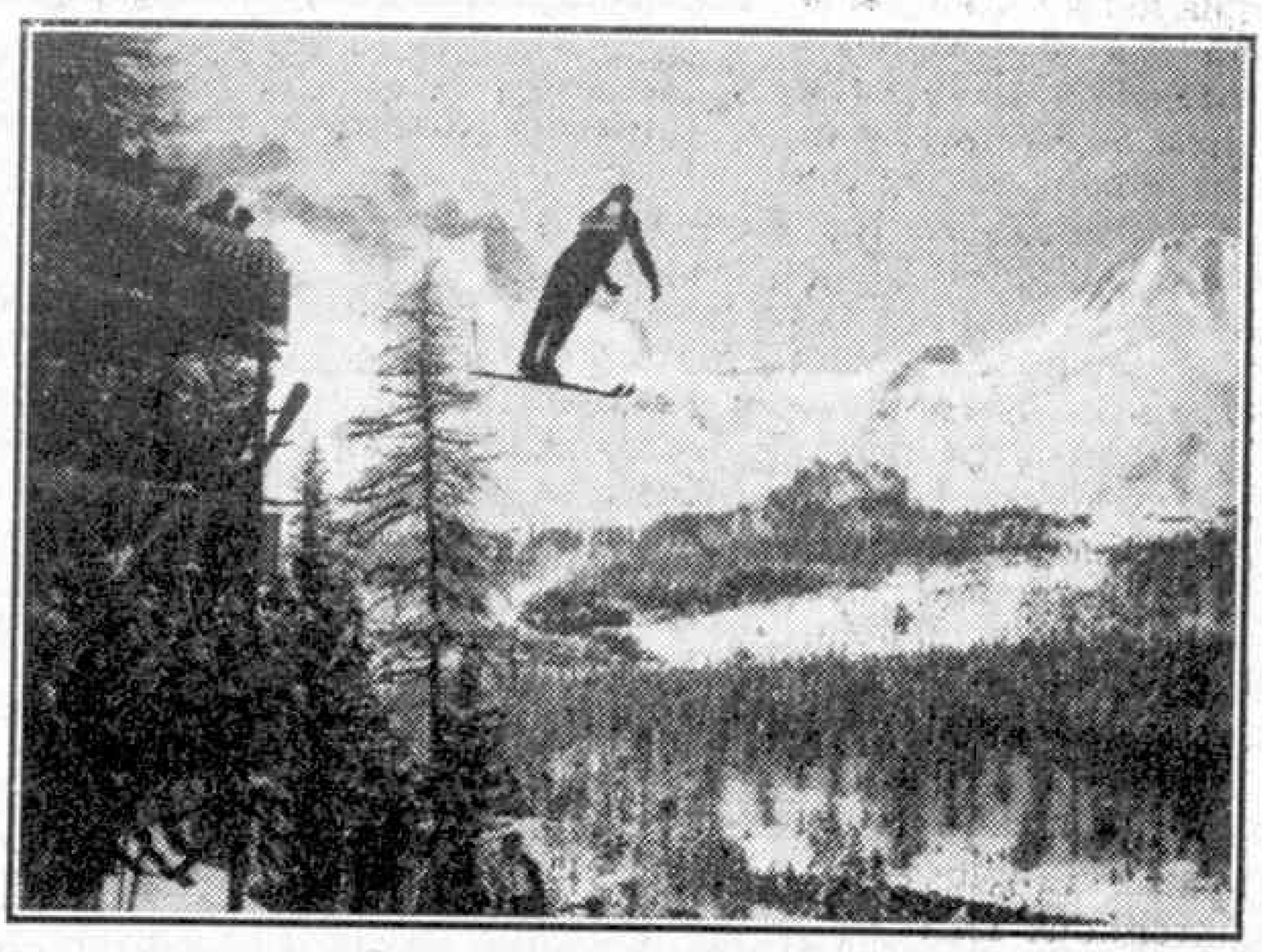
established winter health resorts, such as Davos and St. Moritz. But it was the ski that really opened up the winter Alps and gave Switzerland the title of "Europe's winter playground." To-day, in alpine towns and villages throughout that beautiful country there are first-class facilities for every kind of winter sport, from ski-jumping and bobsleighing to quieter pastimes such as curling.

Modern skis are three to four inches wide, tapering toward an upturned point at the front, and for general sport the correct length for a pair should equal the distance from the ground to the palm of the hand extended at arm's length above the head. Although they are sometimes made of light aluminium or plastic material, hickory wood is most widely used for the purpose. The timber is specially treated before manufacture, but the skier himself uses special waxes to cover the sliding surface according to the prevailing snow conditions. Most skis are edged with steel to grip hard snow and icy surfaces, and strips of sealskin may be used to prevent slipping backward during uphill climbing.

Ski poles, which are made either of cane or aluminium, not only assist uphill climbing, but are used also for steadying and braking one's descent when ski-ing downhill. They are equipped with circular metal wheels, or snow rings, about six inches from the point, to prevent them from sinking too deeply in the show.

The measurements and weights of skis vary according to the type of sport for which they are used. Those used for downhill running are long, wide and heavy, but even heavier skis are used for jumping. The lightest and narrowest are selected for cross-country racing, where greater flexibility is required, and somewhere between the downhill and cross-country types are the medium weights for controlled slalom racing over hard-packed snow.

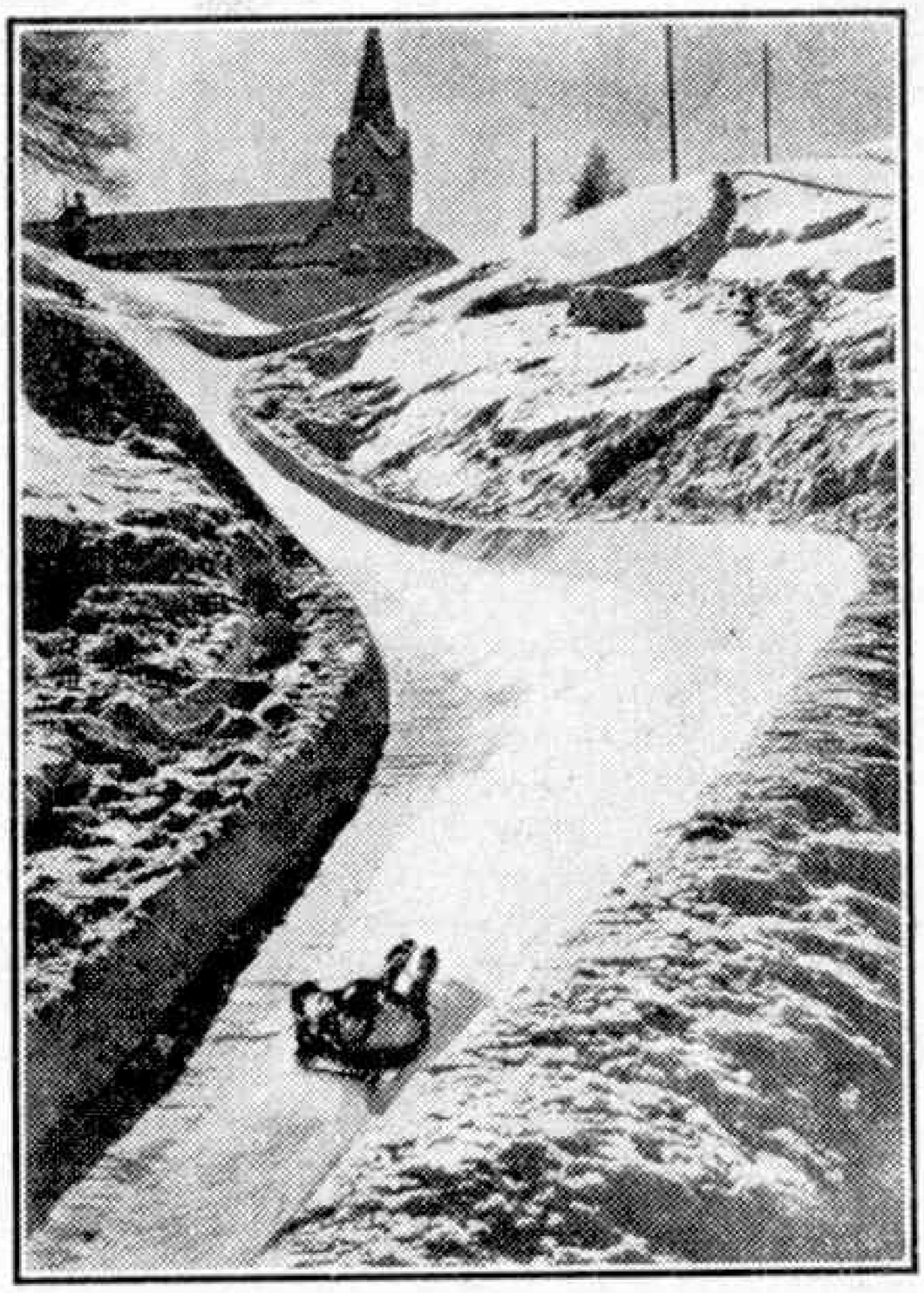
Downhill racing is by far the most popular form of ski-ing to-day. The longest ski run in the world is the famous Parsenn run, above Davos, which is used by thousands of skiers each day during the season. From Davos Platz, which, incidentally, has Europe's largest skating rink, the Parsenn funicular railway carries skiers in about twenty minutes to Weissfluhjoch, 8,738 ft., from where there is a wonderful choice of ski runs in every direction. The main runs are over an uninterrupted breath-taking descent of



The thrilling flight through the air of a ski-jumper at St. Moritz. Distances of well over 300 ft. have been achieved by skilled jumpers.

nearly ten miles down to the Prattigau valley.

Apart from the Swiss mountain railways, ski-hoists and chair-lifts operated on overhead cables are now in use at all the chief Continental winter resorts. By such means skiers can be quickly transported from the resorts direct to the snowfields and starting points of the ski runs. This saves a great deal of laborious uphill climbing and consequently allows the skier much more time for the real sport. In bygone years, before the "lifts" were installed, it took skiers perhaps three or four days of really hard going on the mountain slopes to enjoy seven or eight thousand feet of downhill running. Nowadays runs of three times that distance are possible in a single day.



A one-man bobsleigh on the Cresta Run, St. Moritz. Speeds of over 70 miles an hour are reached by two-men bobsleighs on this famous run.

The art of ski-ing has been greatly advanced through the ski clubs that have sprung up all over the world in the past forty years or so. The British clubs in particular have played a leading part in the development of Swiss winter sports, just as Britons were prominent among the ski pioneers in the Alps half a century ago. Modern slalom racing, which is controlled ski-ing at its best, was a British development. Slalom events are run on a flagged downhill course over various gradients, the flags being so arranged as to make the turns as difficult as possible. They make demands on muscle and brain alike, and call for perfect body control. In a Giant Slalom, such as that to be raced at Oslo in February, the course includes all the features of both a slalom and an ordinary downhill course. The slalom track is laid out on the widest part. Cross-country racing is the most strenuous form of ski-ing.

The most thrilling of all winter sports events are the ski-jumping competitions. Jumping on skis is probably the nearest that man has ever got to bird flight, apart of course nowadays from gliding. But this is a highly specialised form of athletics which few can hope to master. The jumper takes a short downward run, plunges into mid-air from the brow of a hill, flies on for a hundred feet or so, and then, on landing, coasts along the snow until momentum is exhausted. Hills for jumping are specially constructed with a take-off run, so that the competitor is shot into the air at an angle slightly below the horizontal. This makes for a better landing.

In the early days of the sport in Norway jumps were made simply over obstacles in the skier's downward path, and not until about 1890 were jumps made from hills. Since that time great progress has been made and the world's greatest athletes on skis have achieved distances of well over three hundred feet. Very advanced jumpers also do fancy diving and ski-acrobatics while in mid-air.

Next to ski-ing and ice skating comes the thrilling sport of bobsleighing. Toboggan races are run on the high Alpine roads in many parts of Switzerland, but the most hair-raising events of this kind are carried out on the celebrated Cresta Run at St. Moritz. This is one of the most difficult of all bobsleigh courses. It is over a thousand yards long, with a drop exceeding 500 ft. between the top and bottom; no part of it is actually straight, and no two gradients on it are alike. In the twists and turns of its ice walls a two-man bobsleigh can reach a speed exceeding 70 m.p.h. The Cresta Grand National, open to bobsleigh champions of all nations, is one of the highlights of the winter season at St. Moritz.

Curling, a very popular winter sport in Switzerland and Canada, was invented in Scotland over three centuries ago.

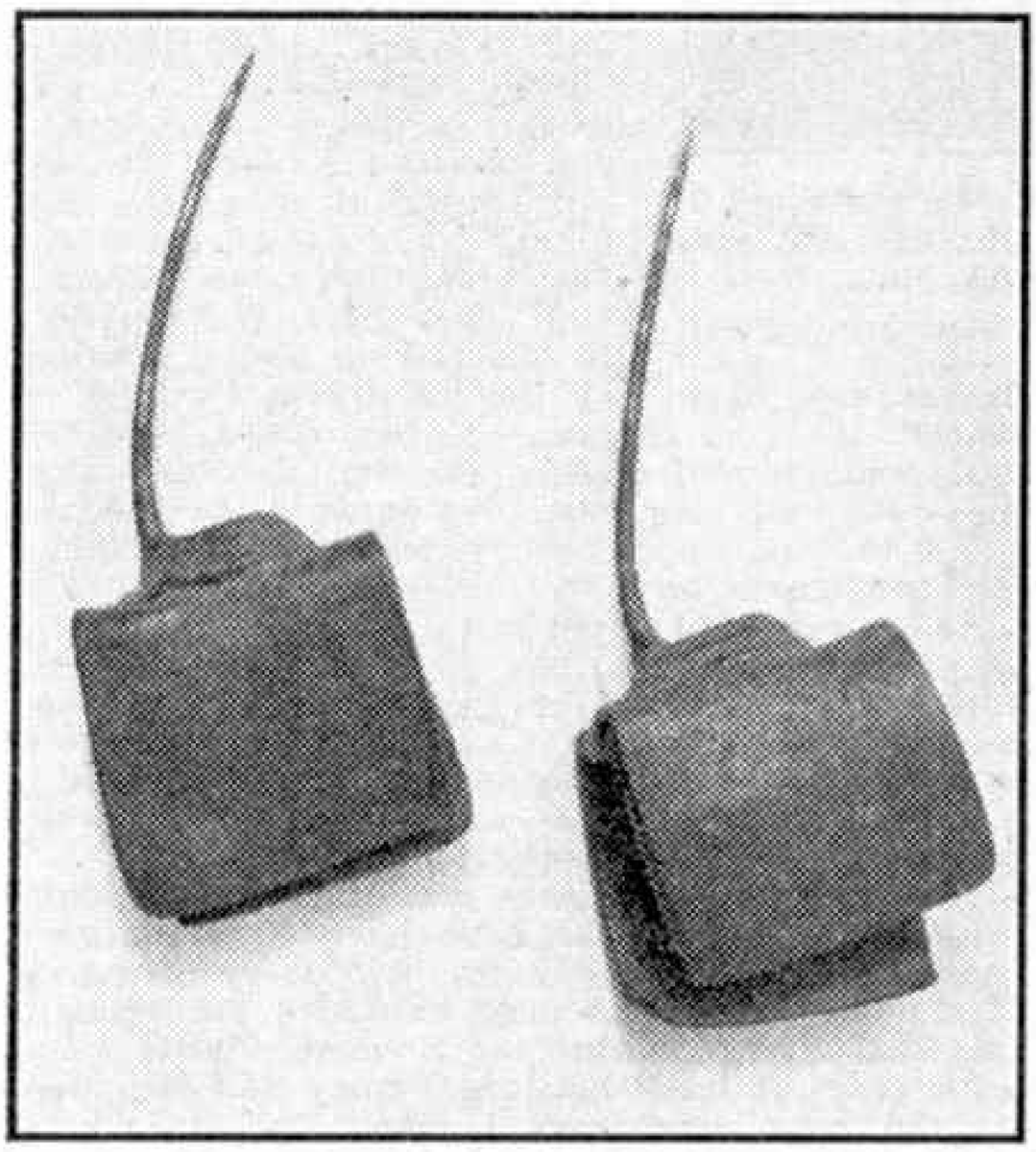
Photography

Things Ancient

By E. E. Steele

ONE should always make a point of photographing any old or rare thing when opportunity affords, as such pictures grow in value as the years go by. The object itself may become lost or destroyed while the photograph remains, a more interesting thing than pages of dry description.

My uncle still has, hanging upon a wall in his house, a fine example of a Forester's Horn, which is an old cow-horn with pewter fittings, brought years ago from some old forgotten farmhouse. Long ago these horns were used to guide the travellers home over the desolate heaths, where robbers



Fighting-cock spurs.

abounded, and in the distant past were sounded to drive away evil spirits from the growing crops.

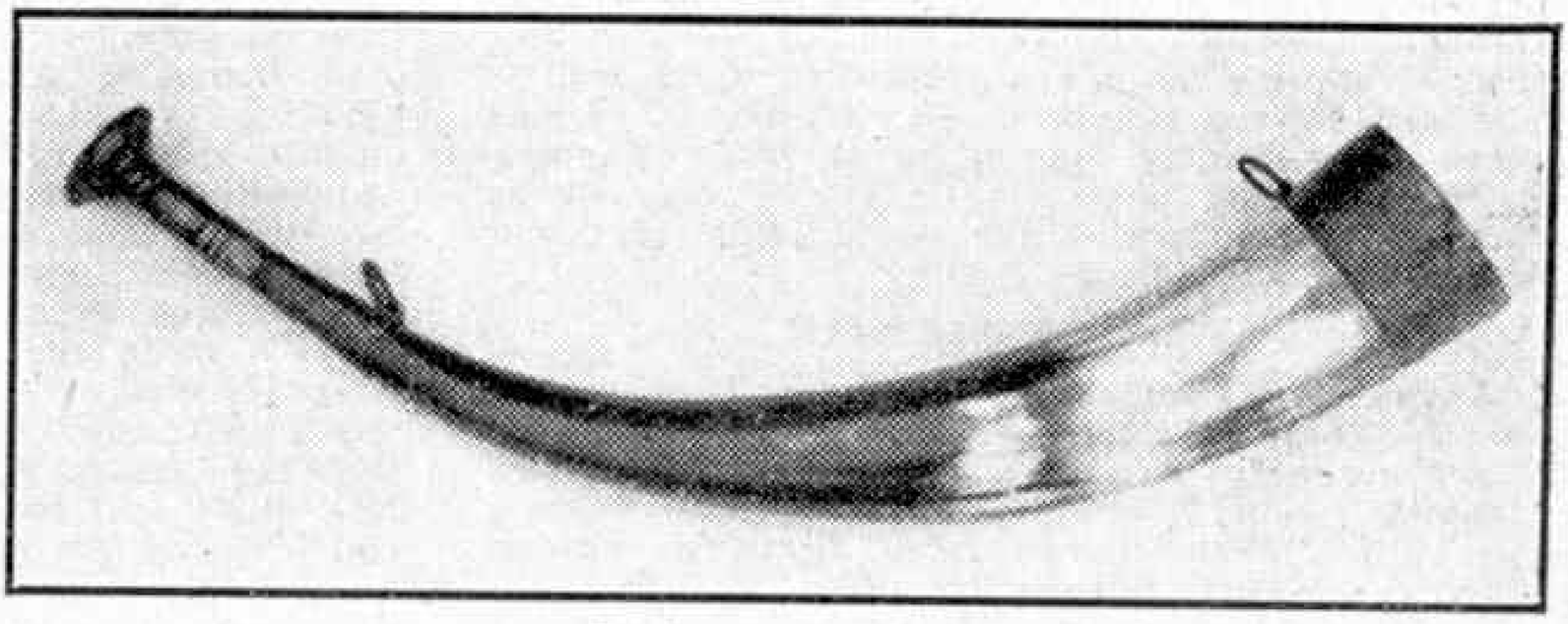
A fine old lady of almost a hundred years old allowed me to photograph a pair of Cock Spurs, which she said were in her home when she herself was a child. These are relics of the old days when cock-fighting was considered to be a great sport. These vicious spurs, with leather clasp to fit the leg, and curving needle-like points to increase the damage done by natural ferocity, were fastened to the fighting-cocks before the bloodthirsty battle commenced. This cruel sport was stamped out long ago in England.

My other illustration shows a very old and valuable vase which depicts, among other things, that fabulous Arabian bird, the Phœnix. In cases like these, which are really worth photographing, it is most essential to take close-ups. For this reason it is good to have a camera capable of working at near distances

Old Chinese vase. The illustrations to this article are by the author.

for all serious work. I note with interest that one or two of the lower-priced modern roll-film cameras, such as the Ilford "Craftsman," permit of focusing down to about 4 ft., which is a marked advantage over the older fixed-focus types.

In order to do the actual photographing the object should be laid on a sheet of paper of contrasting shade, light if the object is dark, and preferably illuminated with a soft side-lighting. This is best done with daylight, as artificial lighting can throw very hard shadows unless very carefully managed.



Old forester's horn.

A trio of locomotives in the roundhouse at Saltley, L.M.R. Midland Class 2 4-4-0 No. 437 is flanked by a "Black Stanier" 4-6-0 on the one side and Compound No. 935 on the other. Photograph by Frank Moss.

Railway Notes

By R. A. H. Weight

Standard Structures for British Railways

Designs have been prepared for buildings of good appearance that can be turned out on mass production lines when required to replace older structures, which vary considerably in style and convenience. These include signal boxes, huts for lengthmen or other permanent way maintenance staff, first-aid rooms, warehouses for the use of traders in goods yards or at outlying stations, together with smaller concrete notice boards and lineside signs such as those indicating the boundaries of railway property or Regions, the stretches of line maintained by various gangs, mile posts and gradient boards. The Southern Region's Concrete Depot near Exeter is undertaking the construction in sections of warehouses, with timber and steel interior fittings easily put together by a small gang of men.

British Railways' Staff Association

One of the world's largest "clubs" has been inaugurated. This will be open to all the 600,000 members of the railway staff, with wives and children, and also to retired railwaymen and their widows. Membership is voluntary, with a subscription of 4d. per week. Athletic clubs or other social organisations throughout British Railways will be asked to ally themselves with the new organisation, which will be managed by the members, with centres in various parts of the country catering for all kinds of sports, pastimes, music, drama, arts, crafts, as well as furthering opportunities for the holding of flower or vegetable shows and the like.

Western Region News

Among the locomotives withdrawn from service are the "Star" class 4–6–0s No. 4007 "*Swallowfield Park*," formerly "*Rising Star*," and No. 4035 "*Queen Charlotte*"; and "Castles" (converted from "Star") No. 4016 "*The Somerset Light Infantry*" (*Prince Albert's*) and 4032 "*Queen Alexandra*."

During October last, "Britannia" class 4–6–2 engines were noted from time to time on the 9.5, 9.10, 9.15, 10.45, 11.15 a.m. and 1.18 p.m. express or main line trains from Paddington, working to Bristol, Wolverhampton or Gloucester; and in the West of England to or from Plymouth and Newton Abbot. Recent allocations include Nos. 70018 "*Flying Dutchman*" and 70023 "*Venus*" to Old Oak Common Shed (Paddington), 81A, Nos. 70019 "*Lightning*," 70021 "*Morning Star*" and 70022 "*Tornado*" to Laira (Plymouth), 83D.

Class "4" standard 4–6–0s have entered service numbered 75005 and upward; several are stationed at Shrewsbury, 84G. The two "Bulldog" 4–4–0s, Nos. 3453–4, were still on the active list last autumn, named "*Seagull*" and "*Skylark*" respectively.

The "*Bristolian*" express from Paddington to Bristol and back has been running formed of B.R. standard stock, except for the buffet car and the brake third, to which a slip coach of G.W.R. pattern is attached on the up journey. At the time of writing the "*Merchant Venturer*" is formed of W.R. coaches. British Railways dining sets, consisting of kitchen car and first and third class restaurant cars, have been noted in the 5.10 p.m. and 6.10 p.m. express formations from Paddington to Birmingham and Wolverhampton. As on other regions, supplies of towels and soap are again provided on principal express trains as far as possible. Clean antimacassars are reappearing in first-class compartments. Women carriage cleaners travel in a number of principal trains to keep everything as neat and tidy as possible—a desirable object in which passengers can also co-operate.

A good many redrainage and other reconditioning works along the tracks have lately been in hand, necessitating in some cases temporary diversions of trains. One of the most extensive operations of this kind during October and November last involved some miles of track between Patney and Westbury, on the main line from London and Reading to Weymouth or the West of England. This length was entirely closed to traffic except during the night on the down line. The heavier expresses hauled by "King" class locomotives ran via Swindon, Chippenham, Melksham and Trowbridge to Westbury, or vice versa; certain lighter ones such as the "*Torbay Express*," headed by engines not larger than a "Castle," used a shorter diversion by way of Devizes.

Scottish Locomotive Changes

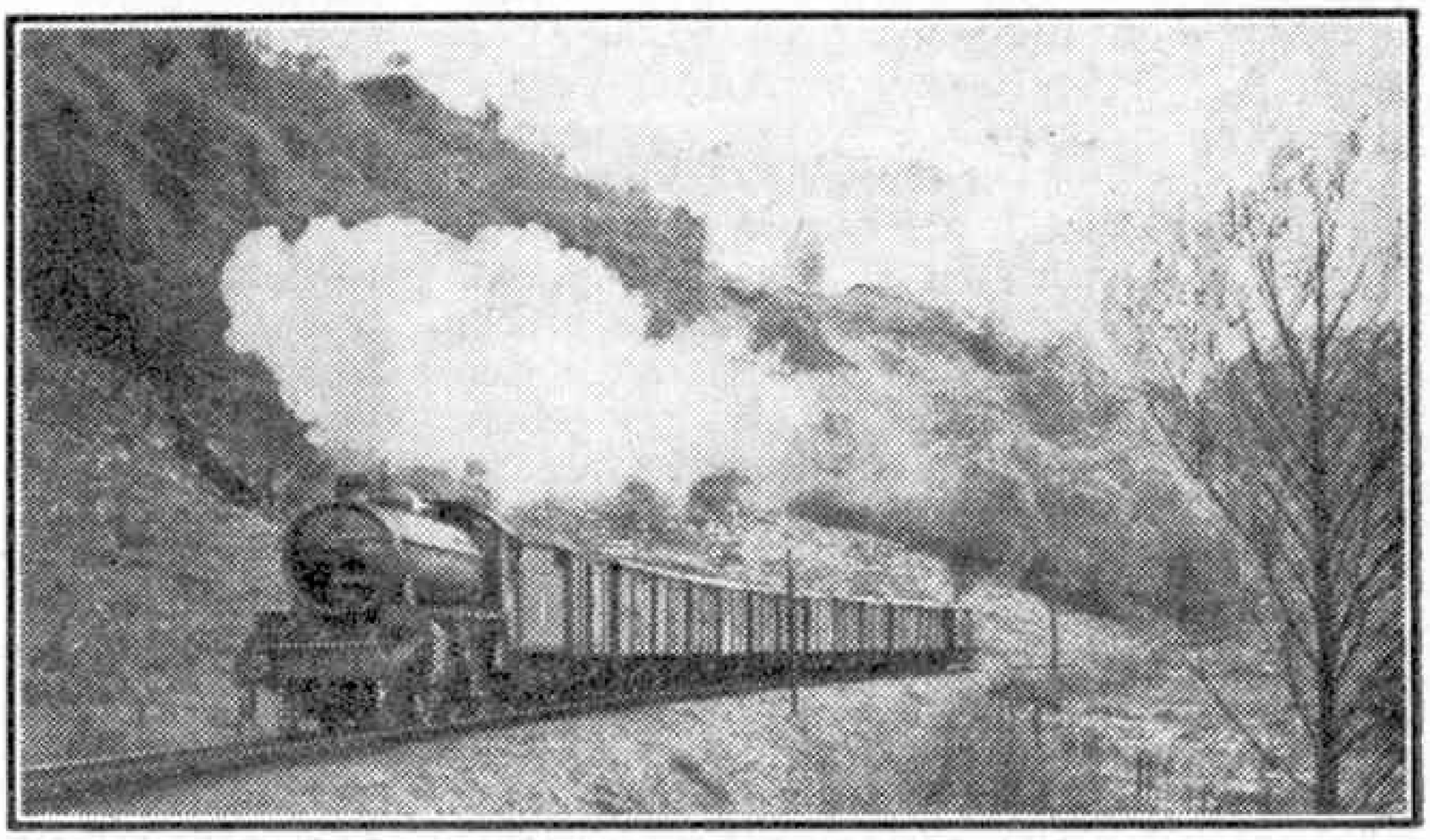
"A1" 4–6–2s of Doncaster design, class "8P" Nos. 60160–1, respectively named "*Auld Reekie*" and "*North British*," were transferred in September from Haymarket to the former L.M.R. Glasgow shed, Polmadie. A reader reports having seen these "Pacifics" working Birmingham–Glasgow expresses on the main Preston-Carlisle route, L.M.R., and apparently doing well. The other two Scottish "A1s"—Nos. 60158, "*Aberdonian*" and 60159, "*Bonnie Dundee*" have also been noted on similar through West Coast engine turns as has the rebuilt "A2" No. 60501, "*Cock o' the North*."

Twelve class "5" 4–6–0 and five class "4" 2–6–4T mixed traffic engines have been transferred to Scotland from the London Midland Region. The "8P" 4–6–2s Nos. 46200 and 46203, named "*The Princess Royal*" and "*Princess Margaret Rose*," have moved to Polmadie from Edge Hill, Liverpool. The one-time North British locomotive shed at Carlisle, Canal, is now numbered 68E.

Southern Tidings

The 2-6-6-2 diesel-electric locomotive, No. 10202, after trial trips to and from Salisbury, commenced regular haulage of the midday Waterloo-Exeter express in the middle of October last, returning from Exeter with the semi-fast 5.53 restaurant car train to London. Ten 2-6-4Ts built to the new standard design at Brighton, Nos. 80010-19, are all understood to have been allocated to Tunbridge Wells, 75F, shed. Some of the L.M.S. type 2-6-4Ts have been moved from there to other depots in Kent or to the Exeter area. Construction continues at Brighton of the standard tanks for other Regions; some are fitted with water scoops, and others with tablet catchers for use on single lines.

Class "2" light 2-6-2Ts numbered 41290 upward recently completed at Crewe are in service on the Central Division, also on empty carriage duties to and from London termini. The building programme provides for the Southern Region to have 30 of these engines. As the last locomotive of the type has been withdrawn, class "J" 0-6-4Ts of the former S.E. & C.R. have become extinct. Only one or two "13" Brighton 4-4-2T engines remain at the time of writing.



A West Highland fish train near Inveruglas, Scottish Region, hauled by "K1" 2-6-0, No. 61997 "MacCailin Mor." Photograph by C. Lawson Kerr, Glasgow.

News from the London Midland Region

Construction is continuing at Derby of class "8" 4-6-0s to the latest British Railways design, following on Nos. 73015, stationed at Millhouses (Sheffield). 19B; 73016 at 19A, Sheffield, 73017-9 at 16A, Nottingham, and 73020-2 at 6A, Chester. One was to go to the Rugby Testing Plant and to be given tests in traffic over the Skipton-Carlisle main line. Class "4" 2-6-0s of L.M.R. design completed at Horwich, Nos. 43124-6 were for the N.E. Region, Hull, Dairycoats, 53A. Nos. 43127-9 also are completed. The class "2" 2-6-2T construction at Crewe is mentioned in the Southern notes. Another diesel-electric 0-6-0 completed at Derby, is No. 12094.

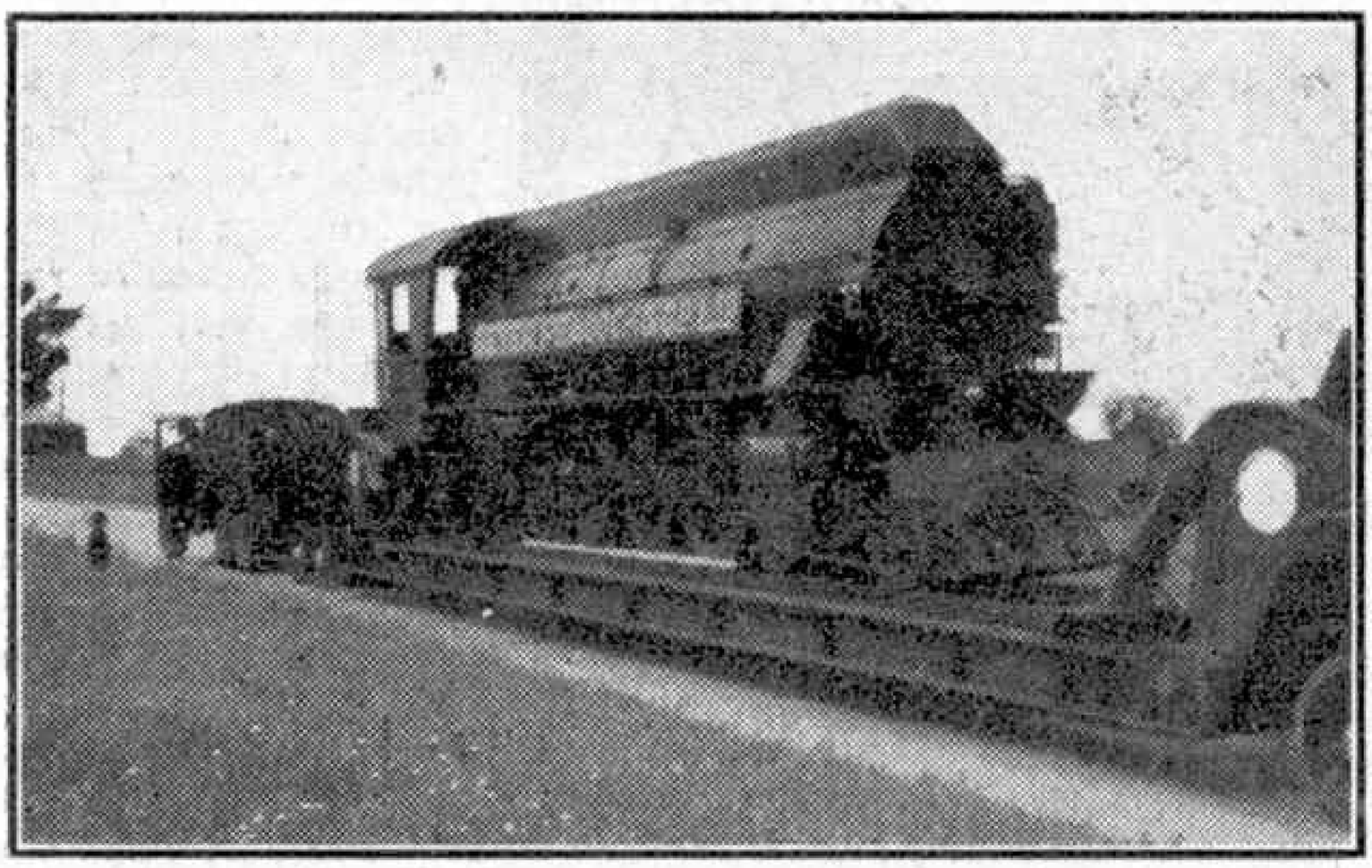
Locomotive District No. 23 on the Midland Division has been dispensed with. Skipton Shed, with Keighley, is now numbered 20F; Hellifield becomes 20G. being part of the Leeds district. Lancaster, with Ingleton, is renumbered 11E, being transferred to the Carnforth district. Among locomotives lately withdrawn were Nos. 41000 and 41001 Midland 3-cyl. Compound 4-4-0s built to the original Johnson design in 1902, and modified to the later Deeley pattern during the first world war. A good many of the first 45 of these famous Compounds, which were Midland Railway engines to begin with, have now been scrapped.

At Bletchley Shed in November I saw the veteran 0-6-0 saddle tank named "*Earlestown.*" This is of London & North Western origin and is No. 8 in the service locomotive list as one of those employed in and around Wolverton Carriage Works.

Some time ago I reported the completion of various improvements in the signalling and platform arrangements at the outer end of Lime Street terminus, Liverpool. Now attention is being given to the inner end of this important station, which is more in the public eye. The concourse, booking and other offices are being entirely remodelled and generally brightened. New refreshment rooms, kiosks and departure indicators will appear among the improved amenities for the convenience of the million passengers who arrive or depart at Lime Street every year.

I have received details of a fast run made by 4-6-2 No. 46228 "*Duchess of Rutland*" with a very heavy train of 17 coaches, weighing about 550 tons. This was part of an afternoon Euston-Liverpool run on a Camden working. Almost the whole of a six-minute late start was recovered by making a start-to-stop journey from Rugby to Stafford, 51 miles in 51¼ min. Even time was achieved in less than 30 miles from the start.

With a 16-coach Blackpool express, the diesel-electric locomotive, No. 10001, gave a spirited run from Stafford to Crewe with a minimum speed of 57 m.p.h. on the Whitmore rise.



A Manchester-built locomotive bound for Australia, No. 20 "Justin Hencock," makes the first stage of this journey by road on a special heavy duty trailer. Photograph by R. Whitfield, Frodsham.

"First Course Navigator Please"

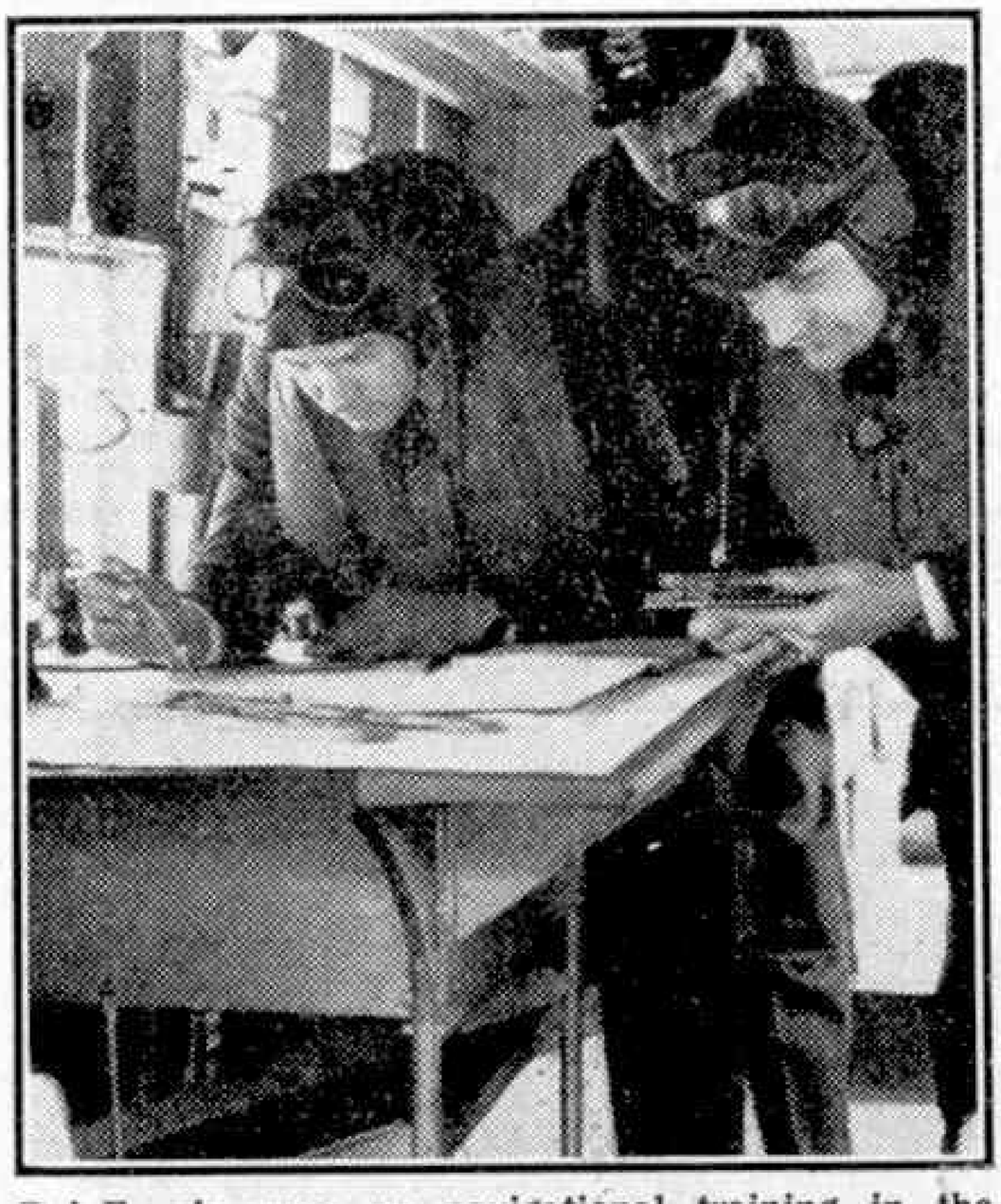
By Ronald Hastings
(ex-Flt./Lt. R.A.F.)

HE's a thoroughbred. I wonder how many times you have heard that said? Perhaps with reference to a horse or a dog. But did you know that it had a special meaning in the Royal Air Force?

I will tell you what it means later. For the time being I will admit that it is connected with those modest, hard working members of aircrew, the navigators. The pilots, even perhaps the air gunners and bomb-aimers, get much more publicity and glamour attached to them than the men on whom the whole success often depends, the navigators.

These men, until the early days of the last war, were known as observers and wore the "O" brevet. A misleading title if ever I heard one, for, of all the men in the aircraft, the navigator has the least time for observing anything, in the general sense of passing the time by gazing out of the window. On long flights the others may do plenty of that, but the navigator's views of the world from the air are usually obscured by his chart and log.

More recently, of course, the navigator has worn the "N" wing. As a general rule, all navigators who finished their training and were officially passed out as officers or N.C.O's before Christmas 1943 wore the "O" wing, those after that date, the "N." To be quite honest, ALL navigators from then on were ordered to wear the "N" brevet, but many of the old hands took a poor view of having to take off their "O"s.



R.A.F. air crew on navigational training in the "flying classroom" of an Avro "Anson." Photograph by courtesy of "The Aeroplane."

In these days a new navigational aid is added to the equipment almost every month, until it seems, to an old D/R man, to be almost a matter simply of turning a switch and flying along a radio beam. All very simple, accurate and restful for the navigator. But what if something goes wrong with the equipment? What if nothing happens when we press the switch?

Our only alternative at such times is our old friend D/R, or "dead reckoning" navigation. This was all the original navigators had to help them, and, even to-day, is in my opinion the most satisfying to use. It is all very well to switch on a wonderful piece of calculating machinery and then sit back with the latest thriller while the aircraft more or less guides itself, but don't you feel a bit of a fraud? A fit, intelligent man, wearing an aircrew wing, and just sitting there like any piece of luggage. Wouldn't you feel better if you yourself were doing the guiding of the 'plane as it roars above the soft, rolling clouds with the bright, clear sun shining down on it, or as it hurries through the black night with the stars twinkling frostily? Of course, any man would.

So let us have a look at this D/R navigation. First of all, two very important names, the track and the course. Many people cannot distinguish between these two, but it is very simple. The track is the line which you want to fly; the course is the one you actually fly, the one you set on the aircraft compass. The difference between them is caused by the wind. For instance, if you want to fly from A to B, the line AB on the chart represents the track, or, to give it its full name which makes it easier to remember, the required track.

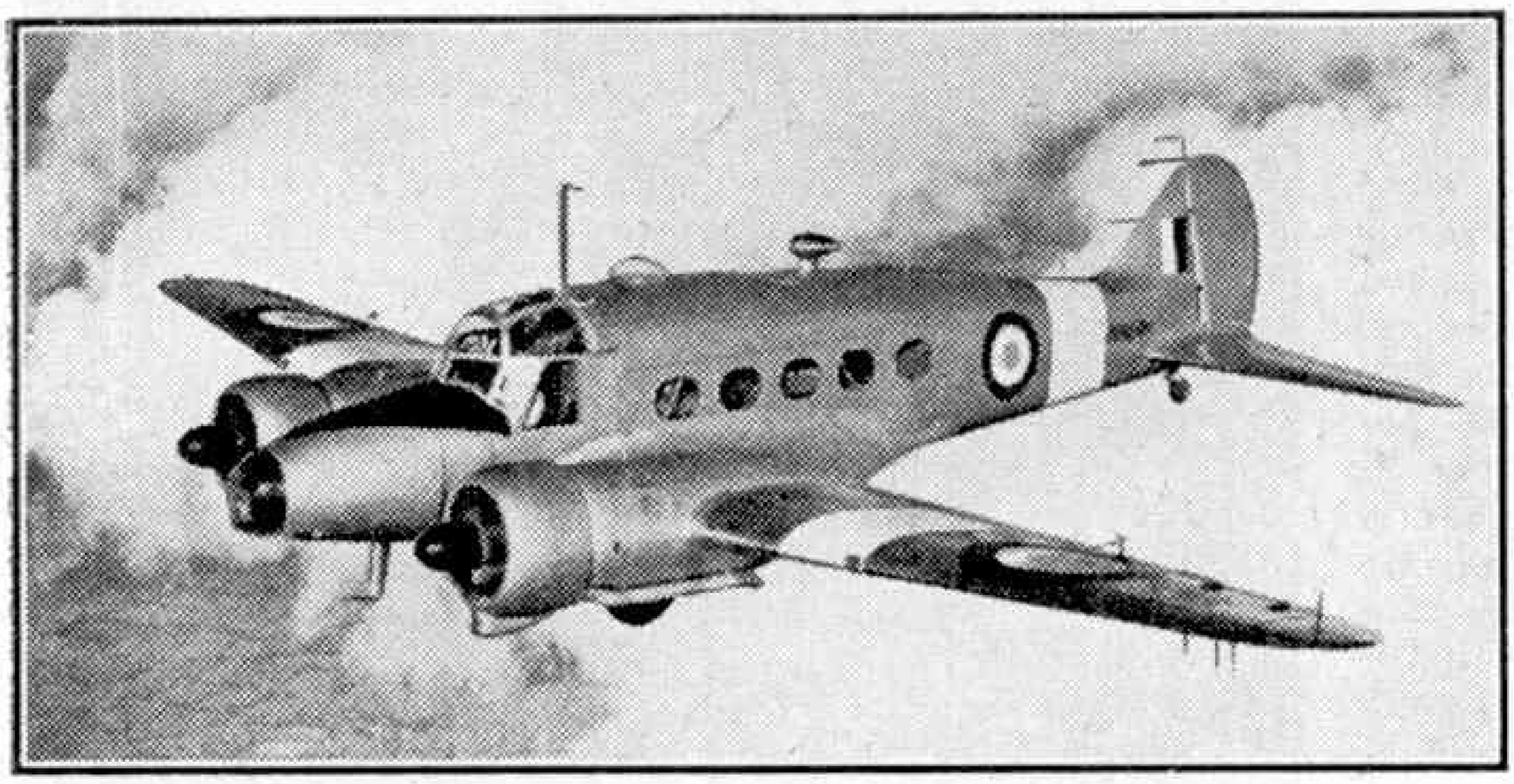
But, it may be, in fact it almost certainly will be, that if you set off to fly from A to B and merely set your compass to that angle, you would miss B by several

miles. That is because the wind will blow you off the required line. In ninety-nine days out of a hundred there is a measurable amount of wind at flying levels.

So, before you get into the aircraft and start up the engines, you have got to make allowance for the wind. Now that is where the "met" man comes in. He is a meteorological expert, a man who studies the weather. All day he works out the direction from which the wind is coming and the strength of it. Every time the wind changes direction, known either as "backing," that is going back around the compass, e.g., from 350° to 300°; or "veering," e.g. 100° to 150°, he already knows about it. In addition he gets regular reports from other "met" men stationed many miles away, so that he knows if bad weather is approaching, or if you will fly through any on your intended flight.

If your flight is part of a big exercise, or, perhaps, a bombing raid, the "met" man will be at the pre-flight meeting which is known as the briefing. At this meeting the crews are told everything which may be useful to them, enemy opposition, wireless aids, secret information, at what height to fly, etc. At this briefing your "met" man will let you know his estimated wind direction and velocity, and you will be able to work out your course. Both figures given, the direction and velocity, are essential. If the wind is blowing full broadside on to the aircraft when it is in flight heading for the destination, it will obviously have more effect on it than if the wind came from nearly dead ahead or astern. Similarly a wind of only 10 m.p.h. will not influence the aircraft as much as one of 30 m.p.h. In order to incorporate these two figures the wind is given in this form, 160/25. That tells you that it is blowing from 160 degrees of the compass at a speed of 25 m.p.h.

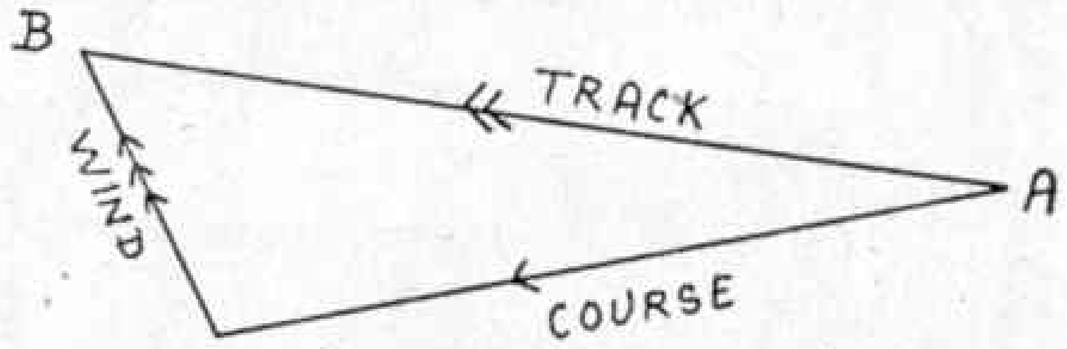
If your flight is only a private one, you will have to seek out the "met" man, without him coming to you. The big airline companies, of course, have their own experts, but in this matter everyone tries to work in together, Service and civil aircraft together, helping each other.



Avro "Anson," the standard navigation trainer used by the R.A.F. Photograph by courtesy of A. V. Roe and Co. Ltd.

Now, how to use this wind figure you have been given, so that, when you are seated in the aircraft and the pilot turns to you and asks "What's the first course navigator?", you will be able to tell him at once.

First of all you lay out your chart with A and B, your starting point and destination, marked clearly and accurately on it. Then you draw a line between them and measure the angle on your protractor. This is the track, and you make a note of the measurement in your log. Now, from your destination B, you have to draw in the wind which is represented by a line with arrows on it to indicate the direction. Let us take an example.



Our track here, from A to B, is 280°. The wind we will say is as I gave it before, 160/25. Now this is the only difficult part of your pre-flight plan, because it is the one occasion when you draw in a line TOWARDS the compass point instead of AWAY FROM it as usual. It is easy to see why. Take our imaginary flight. The wind is blowing from 160. As we fly along from A to B it will be coming from our left hand, and will blow us off to the right of our intended track. So, to counteract this

"drift" as it is called, we must steer our 'plane to the left of the track just enough to make up for the interference by the wind. From B, then, we draw in our wind TOWARDS 160. A line drawn from somewhere along this wind line to A, will now be our course, which, if we set it on our aircraft compass as soon as we are airborne at A, will take us exactly to B.

The question is, how long to make the wind line? The length depends on the strength or speed of the wind, the second wind figure. Remember that this is given in miles per hour, so if our trip is estimated to take exactly an hour, we mark off an hour's wind, in this case 25 miles. If the trip is estimated to take only half an hour, you mark off only half the wind, 12½ miles, or if four hours, 100 miles, and so on. A line to A, and we have completed what is called the "triangle of velocities."

We may now measure the course, which is what the pilot will want. He is not concerned with tracks or winds, only courses to set on his compass, and he relies on you to give them quickly and accurately.

During the flight the wind may change quite often and it is up to you to measure it. You cannot tell just by looking out of the window whether the wind has changed, so you check it at regular intervals to make sure.

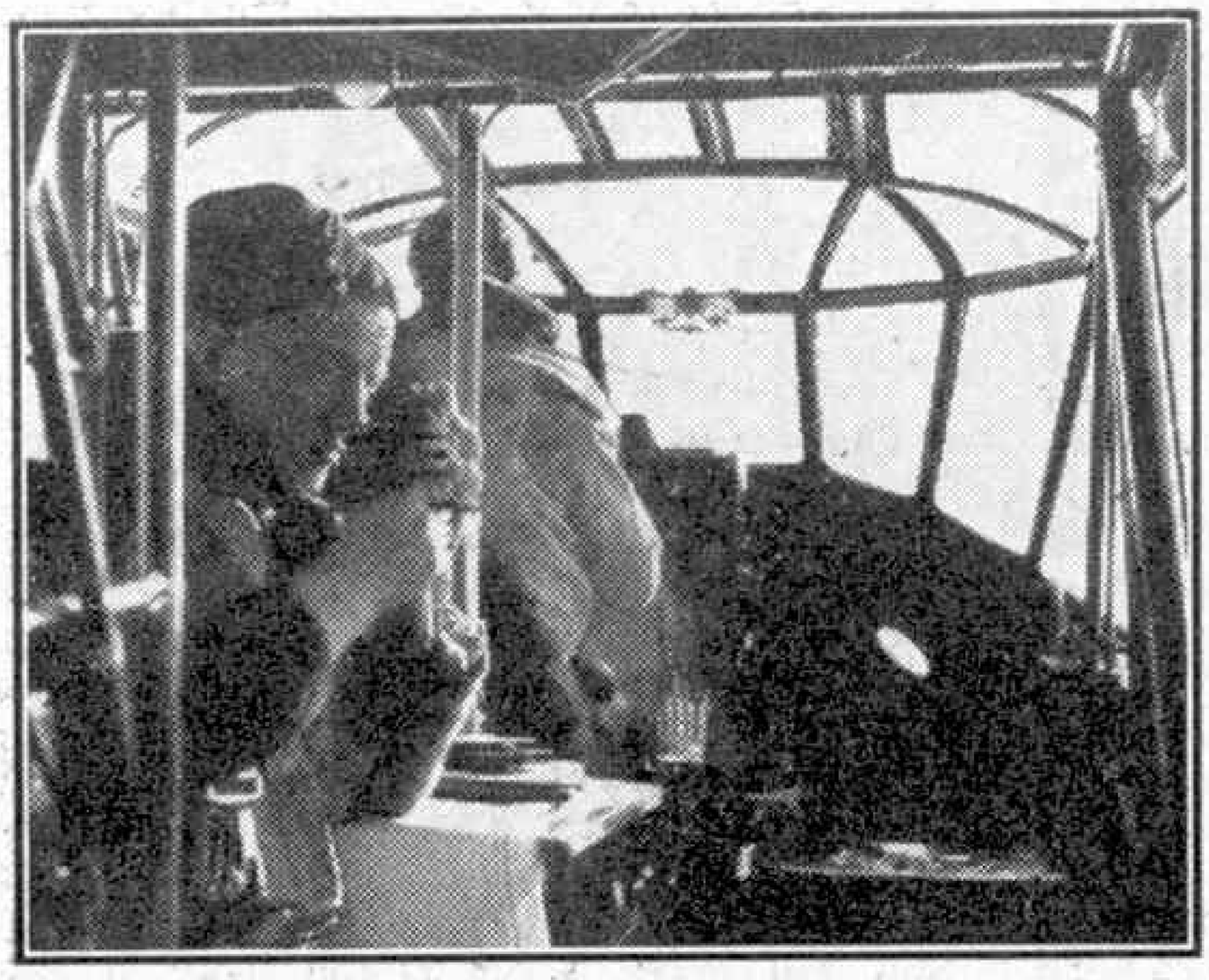
One thing you must do immediately is check the estimated wind given to you on the ground by the "met" man. As soon as the aircraft has ceased climbing and is forging steadily ahead on an even keel, you work out your first wind figures. Then, by applying them as before, you can check the course already given to the pilot, and request him to make any necessary alteration. This is important as the "met" wind may very well be a little out, and you, as a navigator, don't want your aircraft to fly too far on a wrong course.

Navigator at work in a B.O.A.C. "Constellation" on the Atlantic crossing—Lisbon-Azores-Bermuda. Photograph by courtesy of "The Aeroplane."

I should like to go into the various highly interesting methods (in fact highly entertaining I always found them) by which the navigator calculates the wind when in flight, but it would take a whole new article.

Altogether the navigator, although he is kept busy, has a very lively time and can take a real pride in the neatness (a big point) and accuracy of his work.

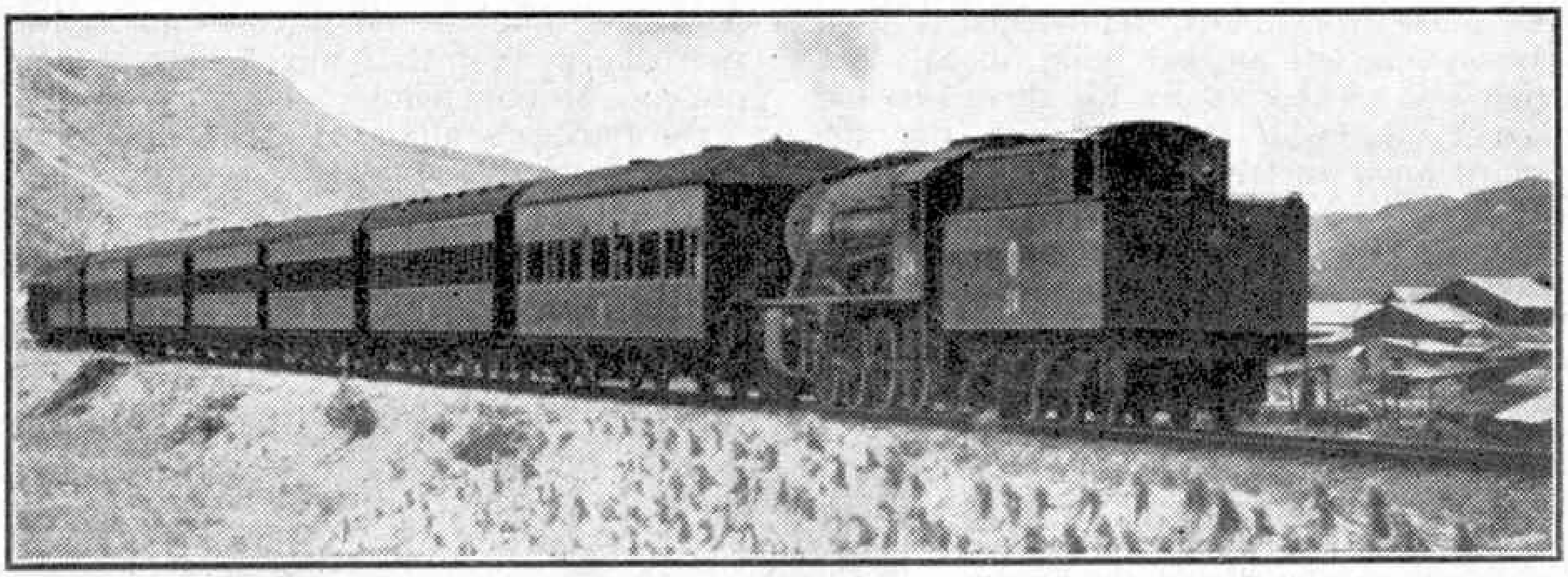
And the "thoroughbred?" He is a man who volunteered and trained as a navigator from the first, and is not a re-classified pilot.



Taking a bearing with a hand compass. Photograph by courtesy of "The Aeroplane."

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.



The Kowloon Express on its way from the Chinese border. The engine is travelling tender first because there are no turning facilities at the border terminus. Photograph by H. R. Mallows, Hong Kong.

THE KOWLOON-CANTON RAILWAY

The title of the Kowloon-Canton Railway, which was referred to in the article "*Chinese Trains Were Different*" in the "*M.M.*" for June of last year, is nowadays a little misleading so far as passengers are concerned.

When the Communists captured Canton, and gained control of the surrounding province of Kwantung, the through train service was interrupted and has not yet been resumed. At present, shuttle services are in operation between Kowloon and the border and between the border and Canton. Passengers reaching the border from Kowloon must alight and walk across the bridge over the Shum Chun River, which marks the border, and then enter another train to proceed to Canton over the Chinese section of the line. This explains why the engine of the Kowloon Express is seen in the accompanying photograph to be travelling tender first on its return from the border, where there are no turntable facilities.

Many of the passengers travel with all their worldly possessions and thus form suitable prey for bandits, who apparently are still active on the Chinese section, as can be judged from the occasional gun battles witnessed from the British side of the border and reported in the local press.

H. R. Mallows (Hong Kong).

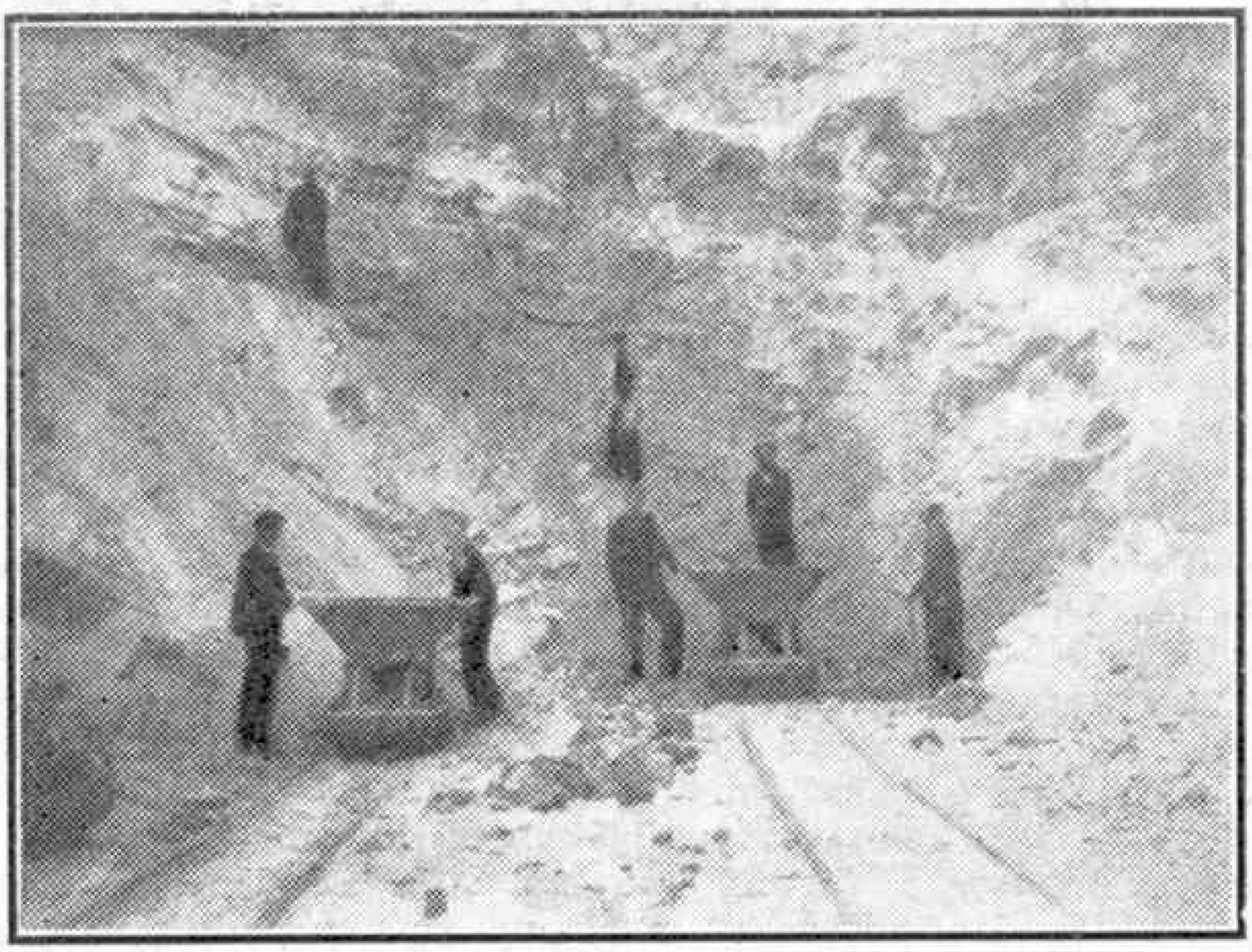
GLASS FROM THE MOUNTAIN

Recently I had the opportunity of climbing Muckish, the well-known mountain in Co. Donegal. This proved very interesting, as there is an unusual quarry at the top. Pieces of yellow rock are dug out with drills, placed in trucks and wheeled to a platform, where they are broken into small stones that are placed on a chute. The stones fall some way down unaided, but on reaching the half way mark they meet with help in the shape of falling water. This water has to be pumped from a nearby spring; so a little pumping station is situated at this point.

On reaching the bottom of the mountain, the mixture of stones and water is crushed, filtered and refined. The finished product is a white sand that has the appearance of unrefined salt. This is transported in lorries to a storing place. It is not used for building purposes, but in the glass industry.

The men who mine this substance have to carry their food, drink, petrol and fuel to the top of Muckish before starting their day's work. This is no easy task, as the mountain is 2,179 ft. high. To assist them a path has been made the whole way up.

D. A. Forbes (Belfast).



A quarry on a mountain in Donegal, which yields fine sand for glass making. Photograph by D. A. Forbes, Belfast.

Printing Books for the Blind

How the Braille System was Invented

TO his dying day, Monsieur Braille, saddler in the village of Coupvray, 23 miles from Paris, reproached himself for having left an awl lying about. The tool was picked up by his three-year-old son Louis, who stumbled and ran the sharp point through his eye. Louis never saw again. Yet the little boy was to turn his own misfortune into a blessing for millions, and when the centenary of his death comes round, on the 6th of this month, blind people throughout the world will remember specially how deeply indebted they are to him, their greatest benefactor.

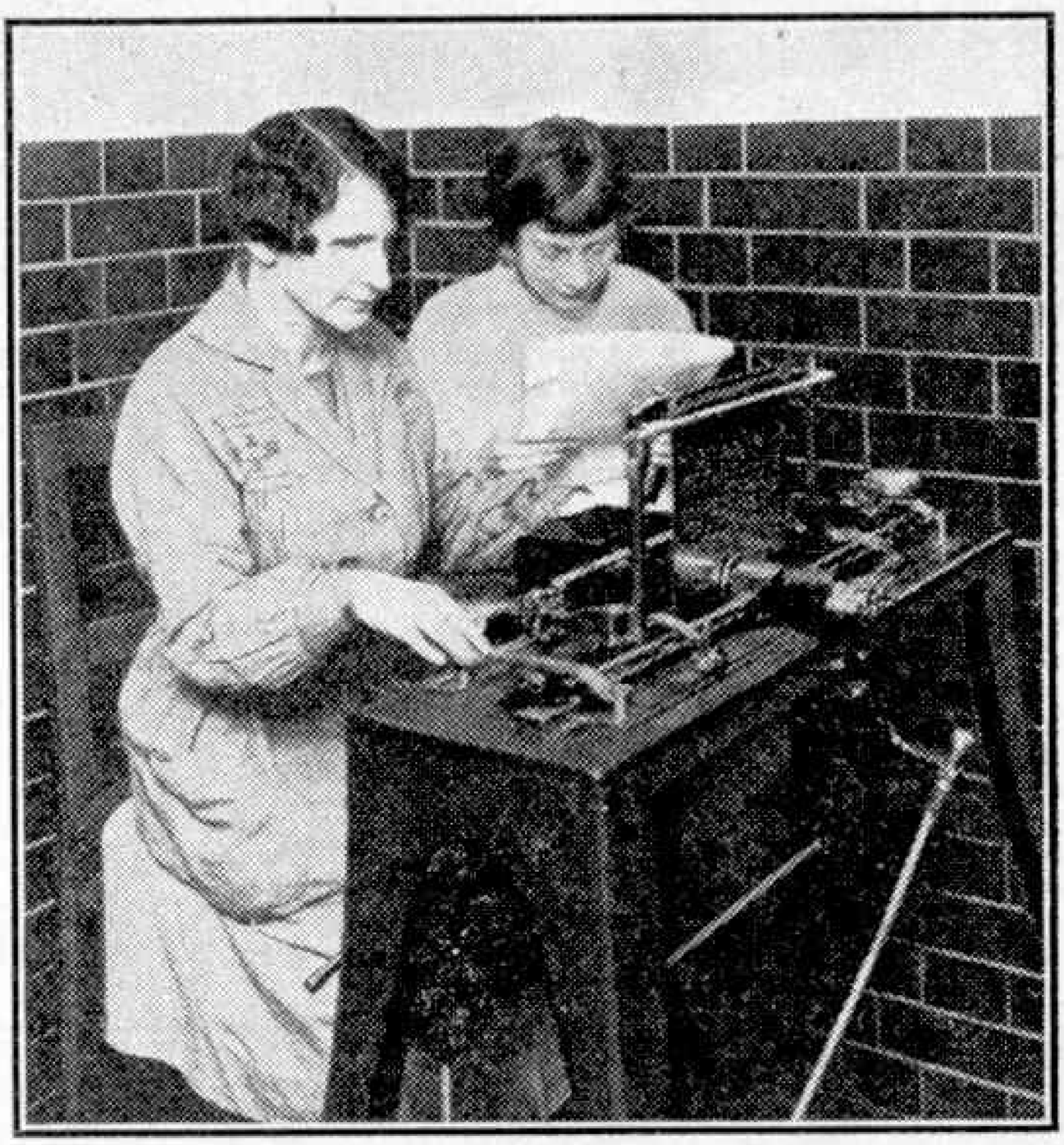
The Braille system of embossed dots, which the tips of the fingers could turn into words, opened a new era for the sightless. Until then most of them had been pitiable beggars; through Braille they learned to be useful citizens.

Young Louis Braille too might have been doomed to the life of a beggar if his father had not realised that he was too intelligent a boy to go untaught, and that every sacrifice should be made for his education.

In 1819, when he was ten years old, Louis was taken by his father to the Ecole pour les Jeunes Aveugles in Paris. The teaching of blind children in those days was crude and haphazard. They learned the ordinary alphabet through large block letters, and they got some idea of geography by tracing out mountains and rivers and oceans on raised maps. But mostly their education was in handicrafts like basket-making and knitting, or in playing the organ and other instruments.

Louis was one of the School's aptest pupils, so much so that, in his early 'teens, he was appointed an usher, a kind of pupil-teacher, at a salary of five francs a month. He was still a boy when he first experimented with the idea of reading by touch. His imagination had been fired by the "ecriture nocturne," or night writing, that had been devised in combinations of twelve dots by Charles Barbier, a French artillery officer, in 1819. Barbier's object was to enable soldiers to read messages in the dark with their fingers, and so to avoid having to strike a light that might betray their presence to the enemy.

As Barbier's alphabet came under his eager, sensitive fingers, young Louis realised that it could be the foundation of the system of which he had long dreamt.



The first step in Braille printing. The words are being dictated slowly by a sighted reader to a blind companion, who operates a special machine that transcribes the copy into Braille characters on a metal plate.

At night, while his fellow pupils slept, he would sit up, working out the possibilities of combinations of dots representing the written word. During his school holidays, he would lie in the fields, still bent on his task, and he was only sixteen when he evolved his six-dot system, a great advance on Barbier's twelve dots. The domino-like combinations could go into lines narrow enough to be covered completely by the finger-tips.

But it was not until after nine more years of polishing and perfecting that Louis felt confident enough to bring his system to official notice. To this day

The metal plates on which the Braille characters are inscribed are used for marking special thick paper in the printing machines.

nobody has improved upon his system, in which there are sixty-three different combinations of dots. Twenty-six of these represent the letters of the alphabet; the rest are used for punctuation marks and contractions of the most commonly used words.

The tragedy of Braille's life was that his system, while creating much interest, was not officially adopted until shortly after his death. Time and again the objection was raised to it that the breach between the blind and the seeing would be widened by a system not based on the "sighted alphabet."

Braille struggled on as a teacher in the Ecole pour les Jeunes Aveugles, using the old methods. To eke out his modest salary, he played the organ in a Parish church. The apparent failure of his system clouded his last years. He stopped talking about it to his friends and seemed to lose all interest in it. Ill-health compelled him to give up his teaching post, and he died shortly afterwards of tuberculosis, at the age of forty-two. He was buried in his native Coupvray.

But Louis Braille's system did not die with him. The year of his death, 1852, also was that of the official adoption of Braille in France as the best medium for teaching the blind.

The system was introduced to Great Britain by Dr. Thomas Rhodes Armitage, an English doctor who became blind. In 1868 Dr. Armitage founded the British and Foreign Blind Association, now the National Institute for the Blind, in London.

In the early days of Braille all embossing had to be done by hand, a most laborious process. The National Institute, which is the largest publishing house for the blind in the British Commonwealth, led the way in the high-speed printing of Braille.

Most of the workers in Braille publishing are blind, but a sighted reader is needed for the very first process. This is reading aloud—and slowly—from the book to be translated into Braille, while a blind operator punches out the words in Braille characters on to a folded metal sheet.

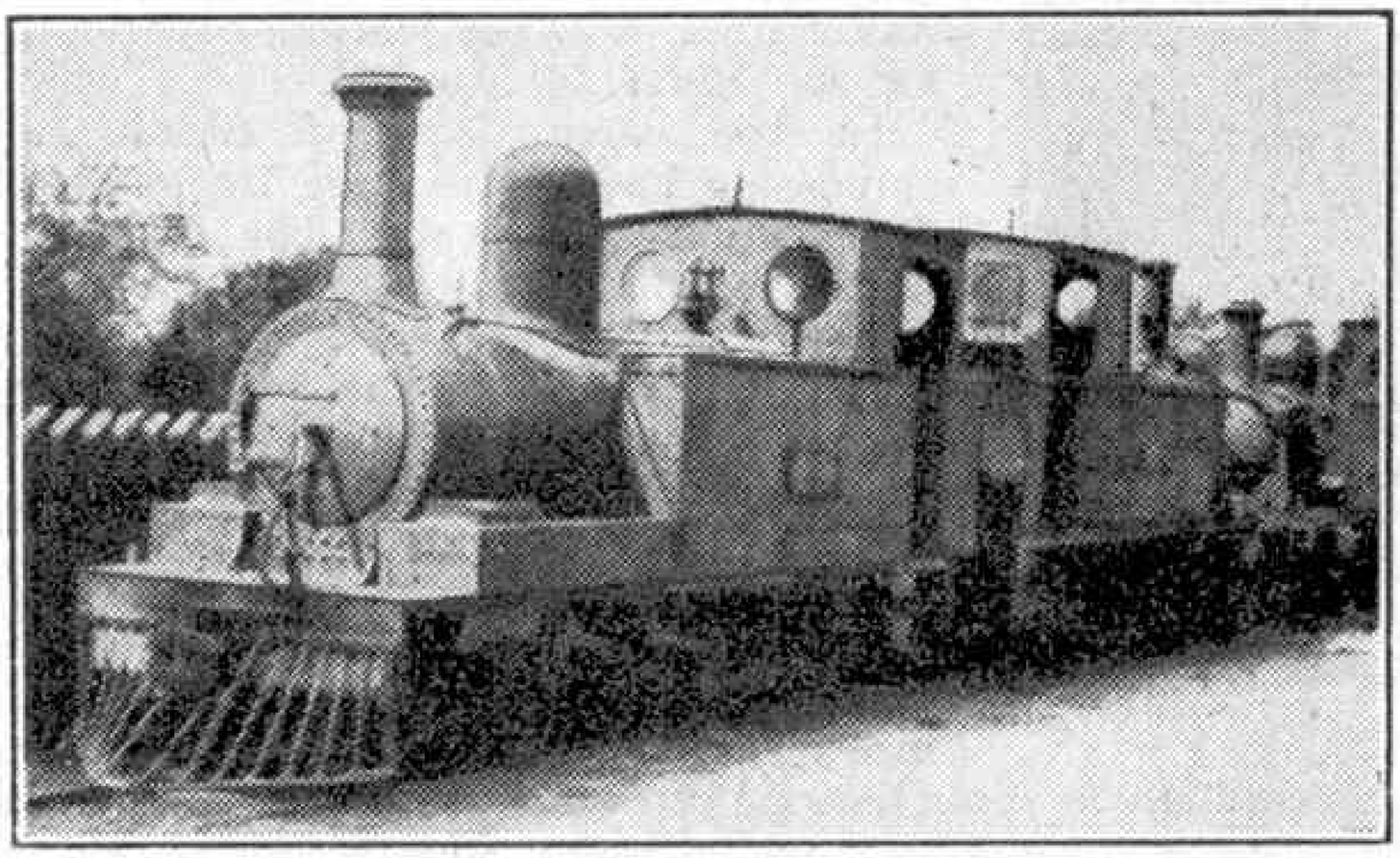
All types of books, from classic works to the latest scientific treatises, can be—and are—produced in Braille. The stock of books now available to the blind indeed fills nearly four miles of shelving in four floors of storage accommodation at the National Institute's headquarters.

Proof reading in Braille. The reader feels her way along the lines of a Braille proof, and uses a punch and mallet to make any necessary changes.

The Schull and Skibbereen Railway

By C. L. Fry

IN the South West of Ireland, on the land surrounding Roaring Water Bay, an inlet of the Atlantic Ocean, there is a small 3 ft. gauge railway connecting Schull and Skibbereen. This railway was originally known as "The West Carberry Tramway and Light Railway Co." and was incorporated on 7th December 1883. The line was 15½ miles long and it was opened for traffic in September 1886, when the name of the company was changed to "The Schull and Skibbereen Tramway and Light Railway Co."



Engine No. 4 "Erin" of the Schull and Skibbereen Railway, which was the first engine in Ireland to have a Belpaire fire-box.

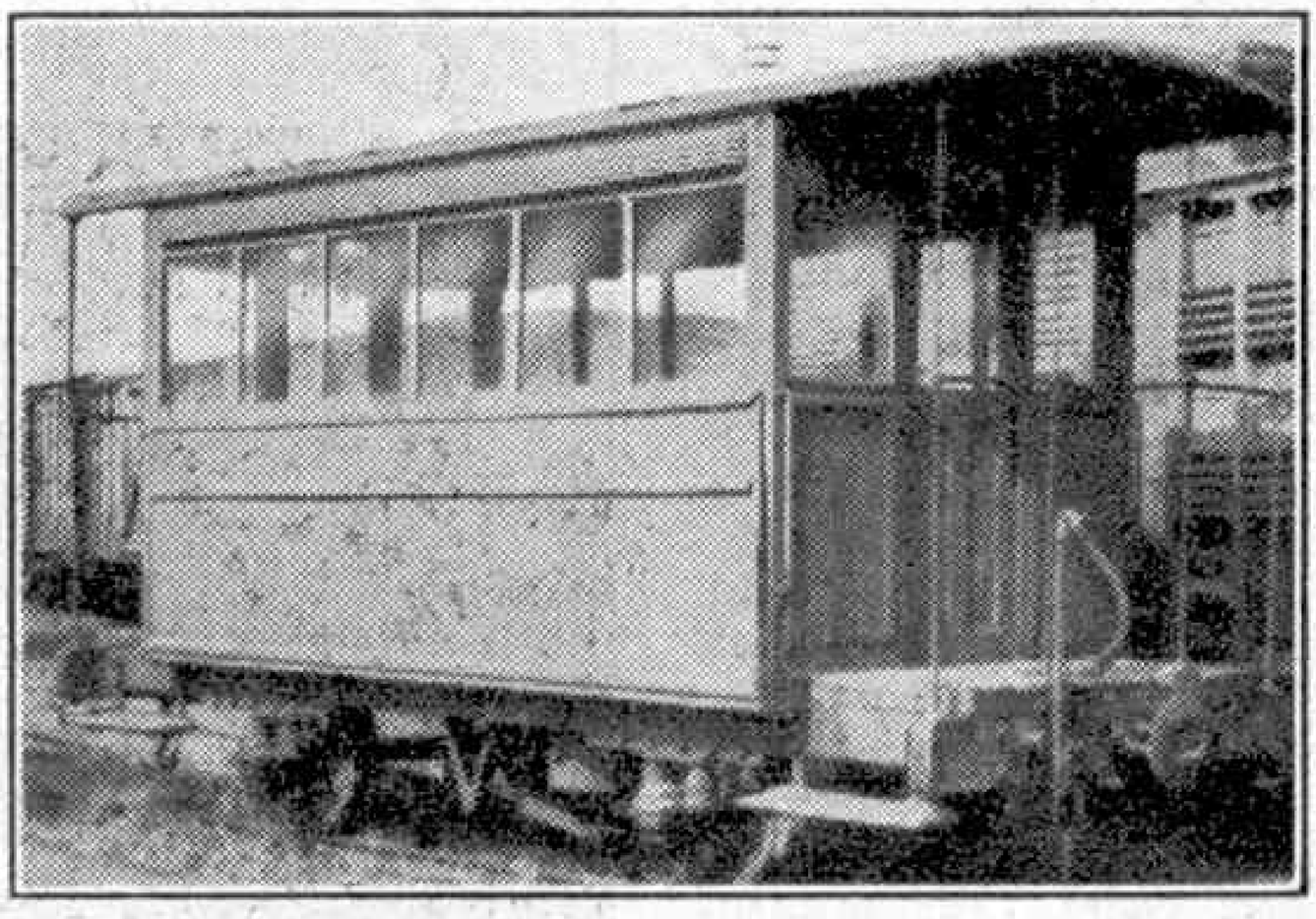
Owing to the fuel shortage caused by the last war the system was closed down in 1944. It was re-opened again for a short period in 1946, but was again closed down early in 1947 owing to the acute fuel situation during the remarkable blizzards of that time. It seems unlikely now that it will ever be re-opened; the rolling stock has deteriorated considerably due to the length of time it has been left lying out in the open.

The offices, main workshops and main locomotive shed were at Skibbereen. The company had at first only three small four-wheeled engines and the shed was built to house these. When three larger engines came into use only two of these could be housed there; the other had to remain outside, or be brought to Schull, where there is a small shed to hold one locomotive.

The broad, or rather Irish standard, gauge station at Skibbereen, on the route from Cork to Baltimore, has only one platform, and Schull and Skibbereen trains were accommodated at the opposite side of this. The narrow gauge track was extended in one direction to form a dead-end siding, from which the Schull main line curved away to the left. Trains leaving Skibbereen had to back from the platform into this siding until the engine had cleared the points that led to the main line; trains arriving from Schull ran into the siding and then backed to the platform.

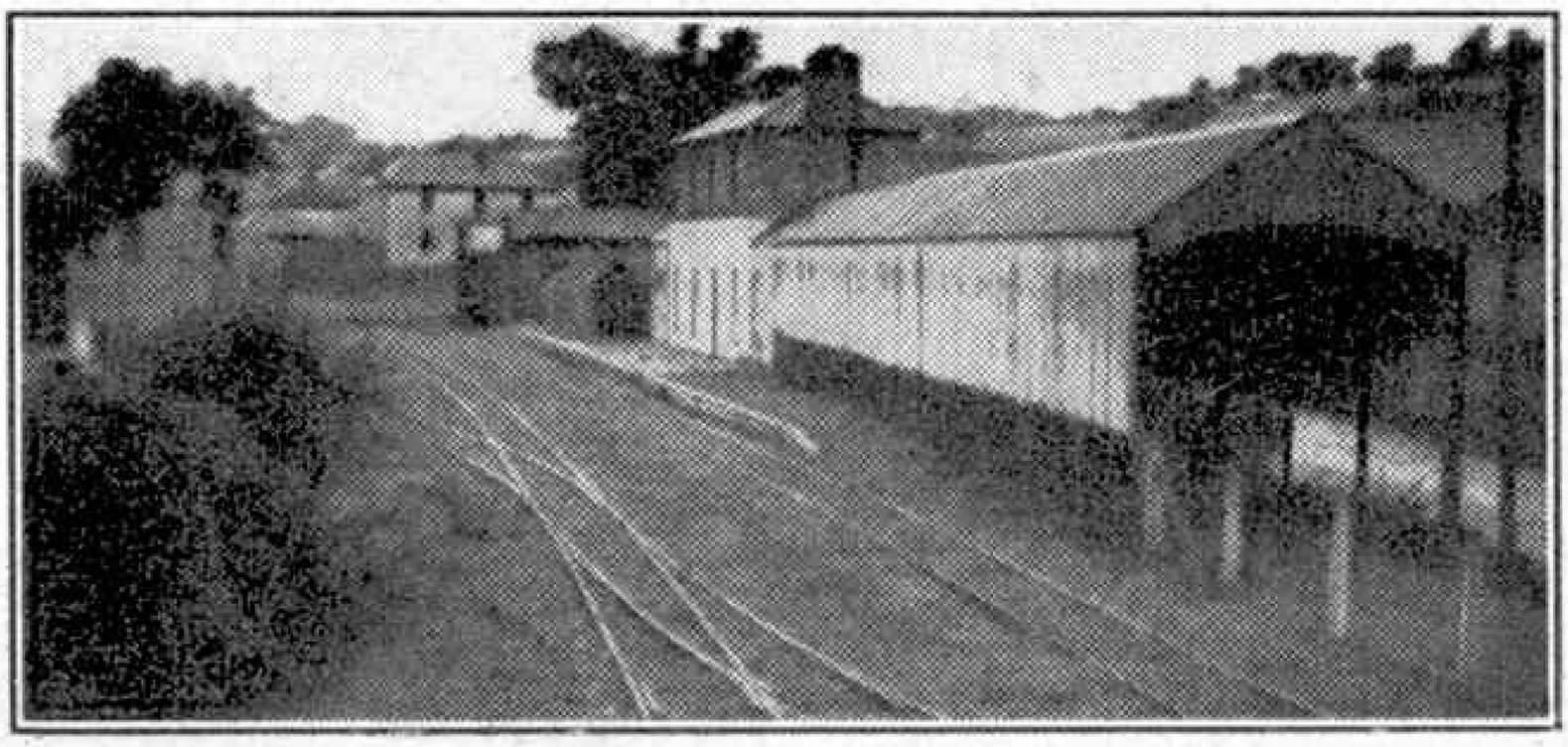
The crest and seal of the West Carberry Tramway and Light Railway Company.

The gradients for the first six miles or so are not too difficult, but after that very sharp curves and gradients as steep as 1 in 30 are encountered. Splendid mountain and sea views are now obtained, as the



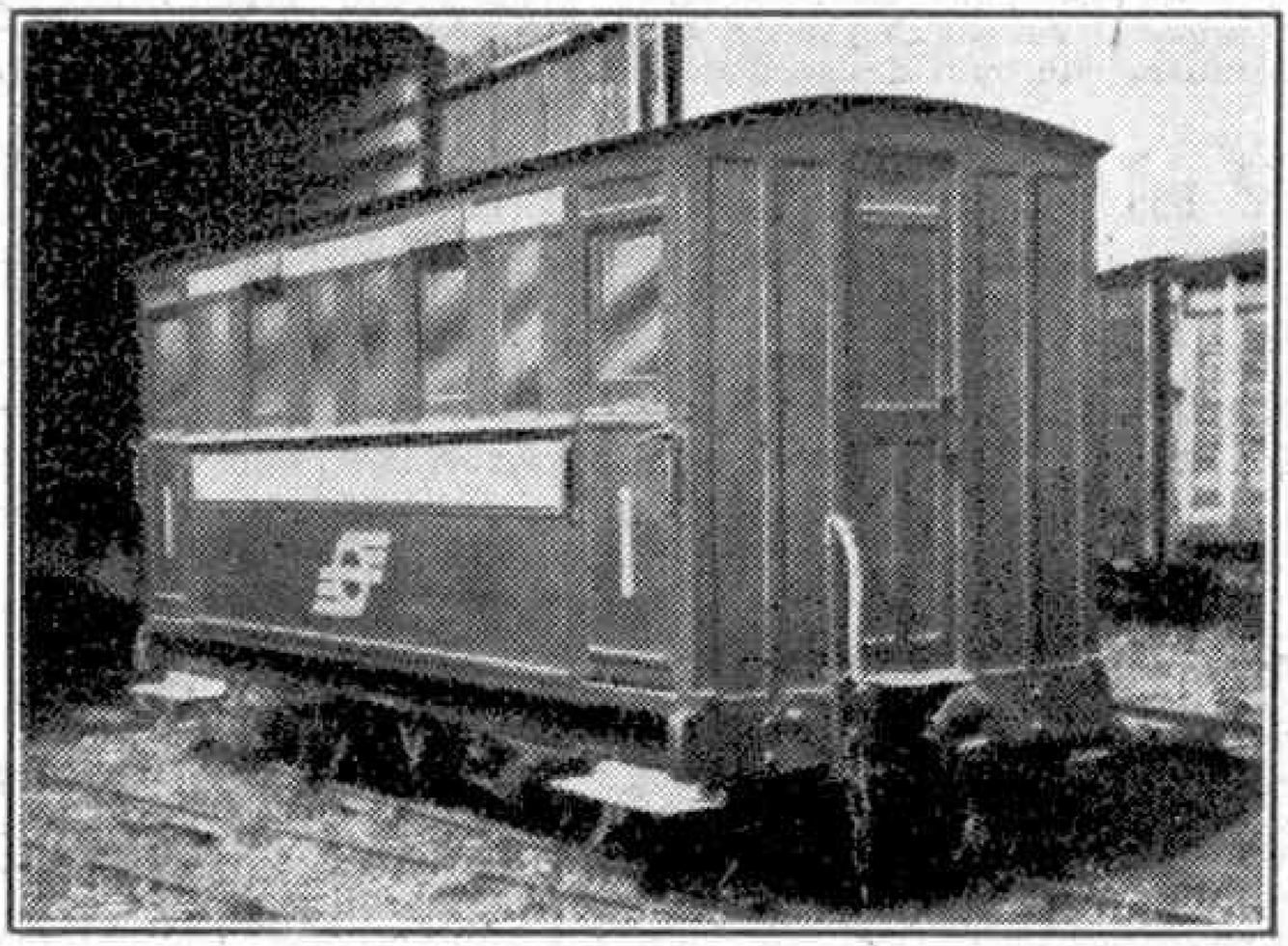
A third class carriage with open end platforms. Note the absence of the usual leaf springs, those used being of the volute, or spiral plate type.

line has climbed to a considerable height on the rocky coast of Roaring Water Bay. For the next three miles or so, into Ballydehob, the line falls very steeply, and there are many sharp curves before this station is reached. It has an island platform with a goods store, and was the only station between Skibbereen and Schull at which trains could pass one another. Just beyond Ballydehob station is a very large masonry viaduct that spans an inlet of this bay, and this is the major engineering work of the line. After this viaduct there is another very stiff climb for some miles before the descent into Schull station.



The station at Schull, with the track well overgrown. The engine shed is at the far end of the platform.

Just before Schull station a line leading out to Schull harbour branches to the right, but this section had not been used for a very considerable time. Schull station has a single platform, and a carriage shed beside it is now used as a bus garage. The engine shed already mentioned is at the westerly end of the station; as it is at right angles to the main line, the only means of access to it is by the turntable just before the buffer stop.



A Schull and Skibbereen first class carriage in C.I.E. colours and bearing the C.I.E. emblem.

For the main part, the line runs beside the public road on reserved track, but there are a few deviations to avoid very sharp curves.

An interesting feature is that American-type water tanks were used. One is located beside the bridge over Roaring Water River, where heavily laden trains always stopped, although there was no station, to take water before the next stiff climb. This crossing of the river is about one-third of the distance between Ballydehob and Skibbereen.

The first locomotives were of the 0-4-0 tramway type and appear to have been most unsatisfactory. It is stated that within a month of the opening of the line traffic had to be suspended to permit certain modifications to be carried out to the engines. Even then the locomotives were still not up to their work, for traffic was stopped for some nine months in 1887. The Board of Trade also insisted that there was to be a speed limit of 4 m.p.h. at some places on account of the sharpness of the curves. The locomotives, numbered 1, 2 and 3, were named "*Marion*," "*Ida*" and "*Illen*" respectively. The first two were called after mountains and the third after a river.

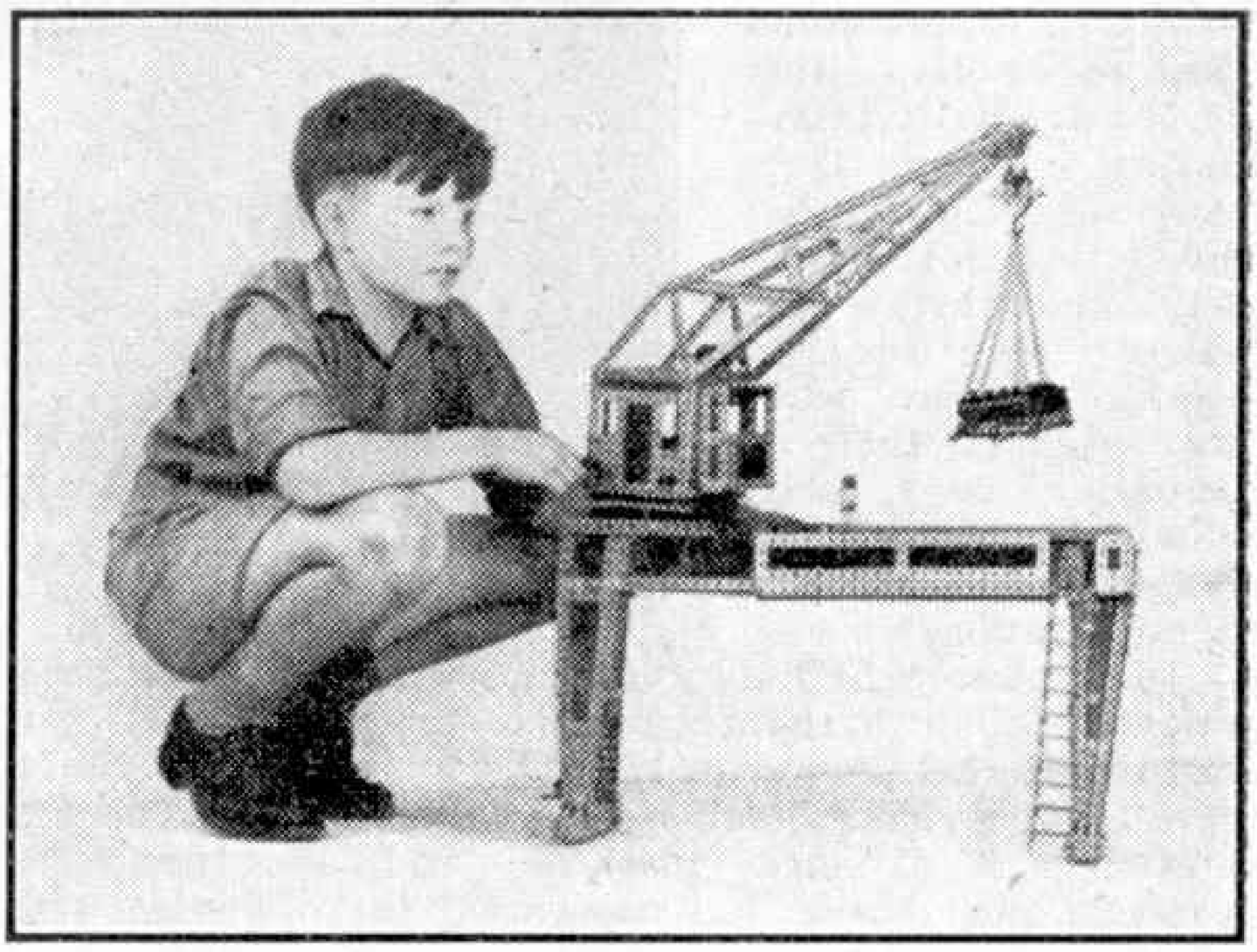
"*Ida*" was extensively re-built in the early part of the century and lasted until the absorption of this company into the Great Southern Railways in 1925. She was scrapped in 1926, whereas "*Illen*" had been scrapped in 1914. The small size of these engines will be realised from their dimensions, which were: Cylinders 9½ in. by 16 in., coupled wheels 2 ft. 6 in. diameter and capacity of the well tanks 350 gallons. On account of their short coupled wheelbase (*Continued on page 46*)

Among the Model-Builders

By "Spanner"

Screw-operated Steering Mechanism

Many model-builders find that after constructing a car or lorry fitted with gear-box and differential units they have insufficient Gears left to assemble an accurate steering mechanism, and usually they have to rely on a simple crank arrangement to steer the model. This is quite a satisfactory method for small vehicles, but in a detailed model the very quick steering resulting from a direct-acting crank may spoil the realism of an otherwise good model. These boys therefore will be interested in the arrangement shown in Fig. 1, which is based on a suggestion put forward by B. Thompson, Newcastle. The device uses a Screwed Rod and a Threaded Boss in place of Gears, and the mechanism is particularly suitable for use in large and heavy models.



Twelve-year-old Hartmut Schweigart, Stellenbosch, South Africa, is very proud of the working model crane that he is seen operating in this illustration. Hartmut designed and built the model entirely unaided.

The steering box is formed by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 1 bolted to a 2" Flat Girder 2. The steering column is a Rod fitted with a Threaded Coupling. A 2" Screwed Rod 3 is screwed into the Coupling and is locked by a nut. The steering column is mounted in the Double Angle Strip 1, and a Threaded Boss 4 is carried on the Screwed Rod.

The drop arm is formed by a Strip 5. A $\frac{1}{2}''$ Bolt 6 is passed through the end hole of the Strip, and a Fishplate 7 is locked tightly to the Strip by a nut. The Bolt 6 is then passed through a Double Bent Strip 8 and is fitted with lock-nuts so that the Bolt forms the point of pivot for the drop arm.

The mechanism is completed by a bolt passed through the slotted hole of Fishplate 7, and screwed into the Threaded Boss 4. A nut is used to prevent the bolt from unscrewing.

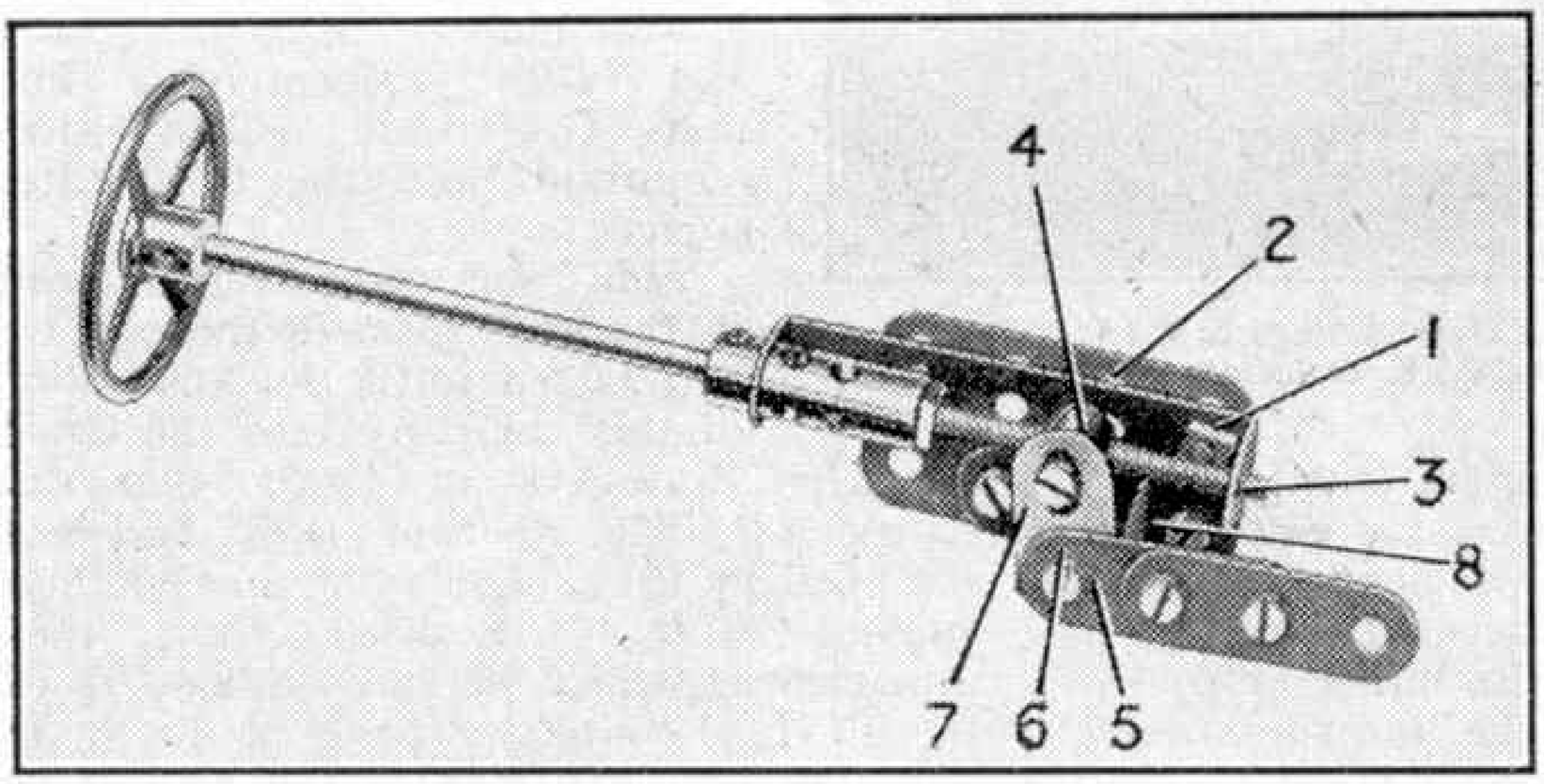


Fig. 1. A screw-operated steering arrangement suitable for use in large and heavy vehicles.

Simple built-up Dredger Buckets

When building a model of a bucket chain excavator recently M. Roberts, Manchester, found it necessary to build up about a dozen small digger buckets and devise a suitable method of attaching them to the Chain. After several experiments he produced the novel assembly illustrated

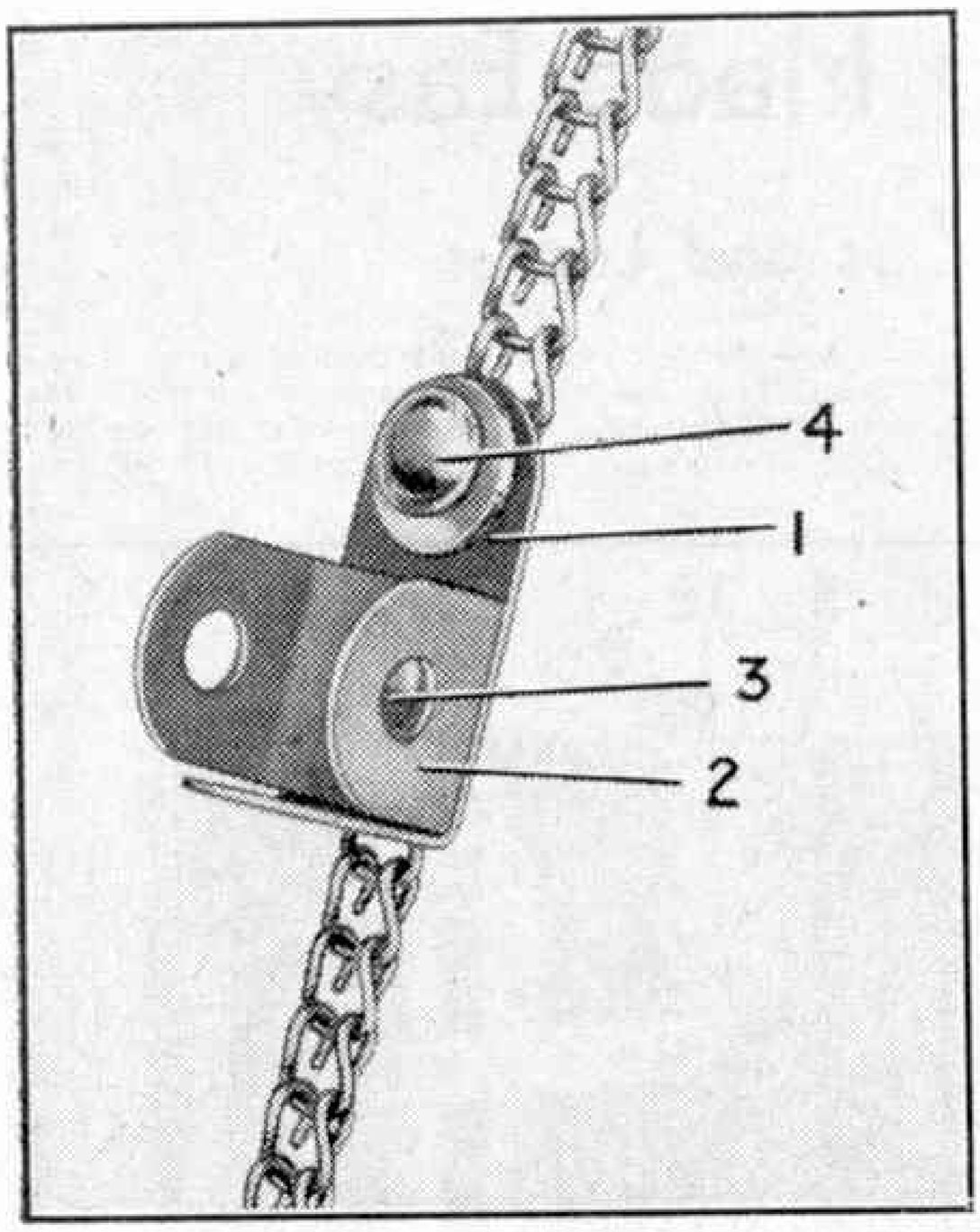


Fig. 2. A simple method of assembling a small dredger bucket.

in Fig. 2. Each bucket consists of a 1″ × ½″ Angle Bracket 1 and a Double Bracket 2. These two parts are fastened to a length of Sprocket Chain by means of two paper clips 3 and 4. The lugs of the clips are cut short, and after passing through the Chain are flattened out so as to allow the Chain to pass smoothly over the driving Sprockets. Provided that care is taken in this operation, a chain of buckets assembled in this way will work quite satisfactorily.

Fitting Gearing to the E20R Electric Motor

The E20R Electric Motor is a compact power unit specially designed for driving Meccano models, and by arranging for it to drive through suitable speed reduction gearing it is capable of operating the largest and heaviest models. A 3:1 reduction ratio can be obtained quite easily by meshing a ½″ Pinion fixed on the Motor shaft with a 57-tooth Gear fixed on a Rod mounted in the centre of the vertical row of holes in the Motor side-plates. This arrangement is quite suitable for small and simple models, but generally it is best to have a somewhat greater ratio. A 9:1 reduction can be obtained by fitting a second ½″ Pinion on the shaft carrying the 57-tooth Gear, and arranging for this to engage a further 57-tooth Gear placed on a Rod mounted in the top holes of the side-plates.

Reduction gearing such as this will be found entirely satisfactory for the majority of models, but other combinations can be obtained by using ¾″ Pinions and 50-tooth Gears in place of the ½″ Pinions and 57-tooth Gears. In very large, slow moving models, such as traction engines however, a very low speed final drive is required, and therefore a much greater reduction ratio is needed.

Generally the necessary gears can be mounted in the model itself, and connected to the Motor by Chain, but sometimes it is more convenient to assemble the Motor and Gears as a complete self-contained unit as shown in Fig. 3.

A 3″ × 1½″ Flat Plate is bolted to each side-plate, and these are joined by 1½″ × ½″ Double Angle Strips. A ½″ Pinion on the Motor shaft drives a 57-tooth Gear carried on a Rod that is fitted also with a ½″ Pinion 1. Pinion 1 drives a 57-tooth Gear 2, and a ½″ Pinion 3 on the same shaft as Gear 2 engages a further 57-tooth Gear 4. Gear 4 is fixed on a Rod 5 that carries also a ½″ Pinion 6 engaging a 57-tooth Gear on shaft 7. The drive is taken from Sprocket 8.

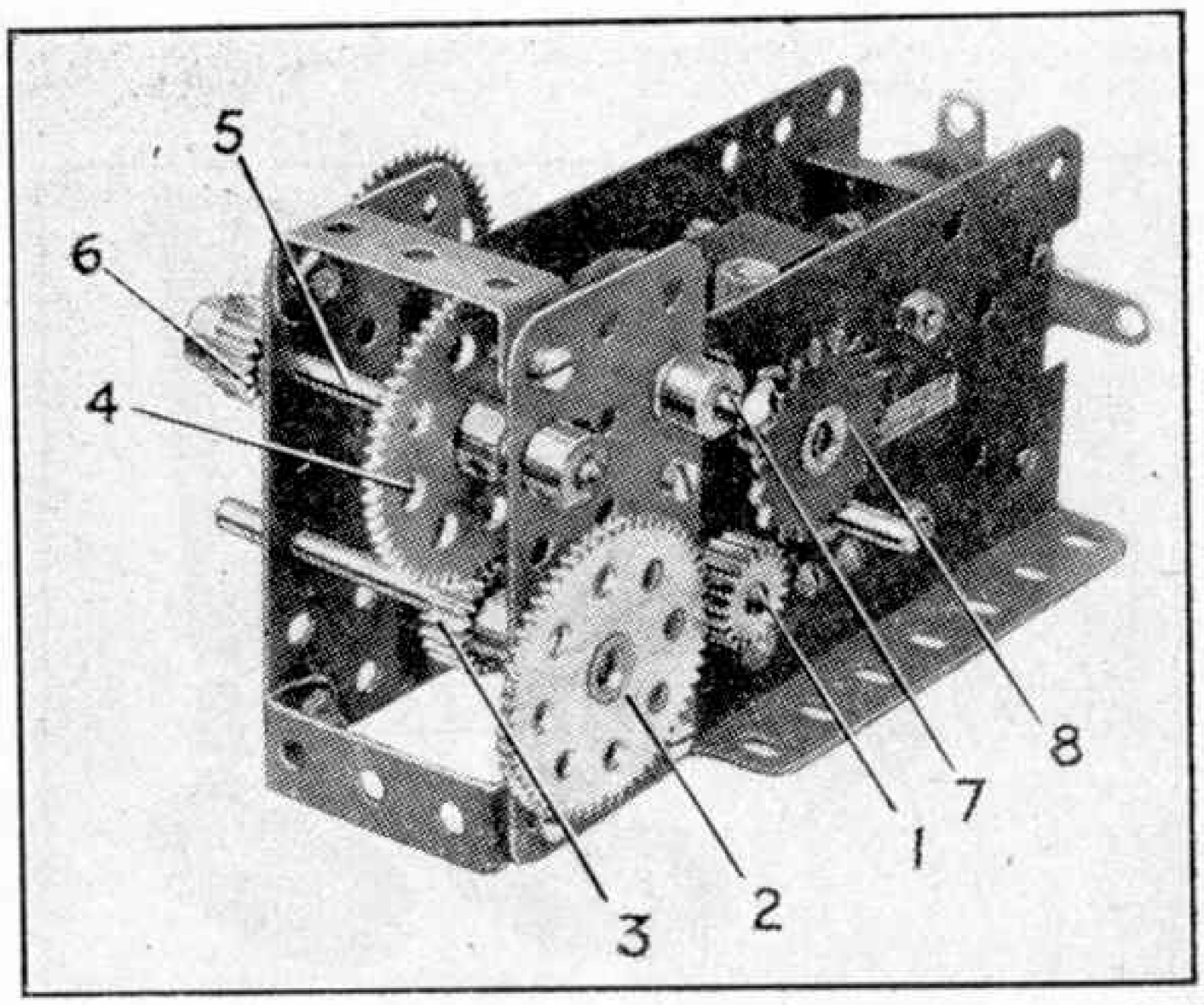


Fig. 3. An E20R Electric Motor and reduction gearing assembled as a complete unit. The gears fitted give a total reduction ratio of 81:1.

Model-Building Made Easy

By "Spanner"

Steering Gear for Cars and Lorries

AT this time of the year thousands of boys make their first acquaintance with the fascinating hobby of Meccano model-building as the result of gifts of Outfits from parents and other relations—and of course from Santa Claus himself!

We wish these new model-builders to obtain the greatest possible pleasure and fun from their Outfits right from the very beginning. To help them to do this we are starting this month a new series of special articles, each of which will deal with a subject that we know from long experience is of particular interest to anyone beginning the Meccano hobby. In fact these articles will be helps to the best model-building.

It does not take very long for anyone possessing a Meccano Outfit to realise that there are hardly any limits to the number and variety of models he can build, and it is certain that one of the most popular of all these subjects is the motor car. Every model-builder wants to build himself a miniature of his favourite car and soon finds out how to do this.

Now it is quite a simple matter to build up a life-like car and fit it with wheels, so that it will run along in a straight line, but much greater fun is obtained if the model is fitted with some simple steering arrangement so that it can be made to turn in any direction. The first of this series of articles therefore is concerned with this important feature of such a model.

There are many forms of Meccano steering gear, as the mechanism is called, and two of the simpler types are shown in Figs. 1 and 2 on this page. These are suitable only for small vehicles, but for this purpose they will be found quite satisfactory.

In the case of the arrangement shown in Fig. 1 there is a front axle beam 8 that consists of a 3½" and a 2½" Strip over-lapped three holes, and it is attached to the chassis by means of Angle Brackets. A ¾" Bolt is passed through a 1½" Strip 9 and a Double Bracket 10. Then a 2½" Strip 11 is fixed in position by a nut, and the bolt is passed through the end hole of the beam 8 and "lock-nutted" so that the assembly is free to pivot.

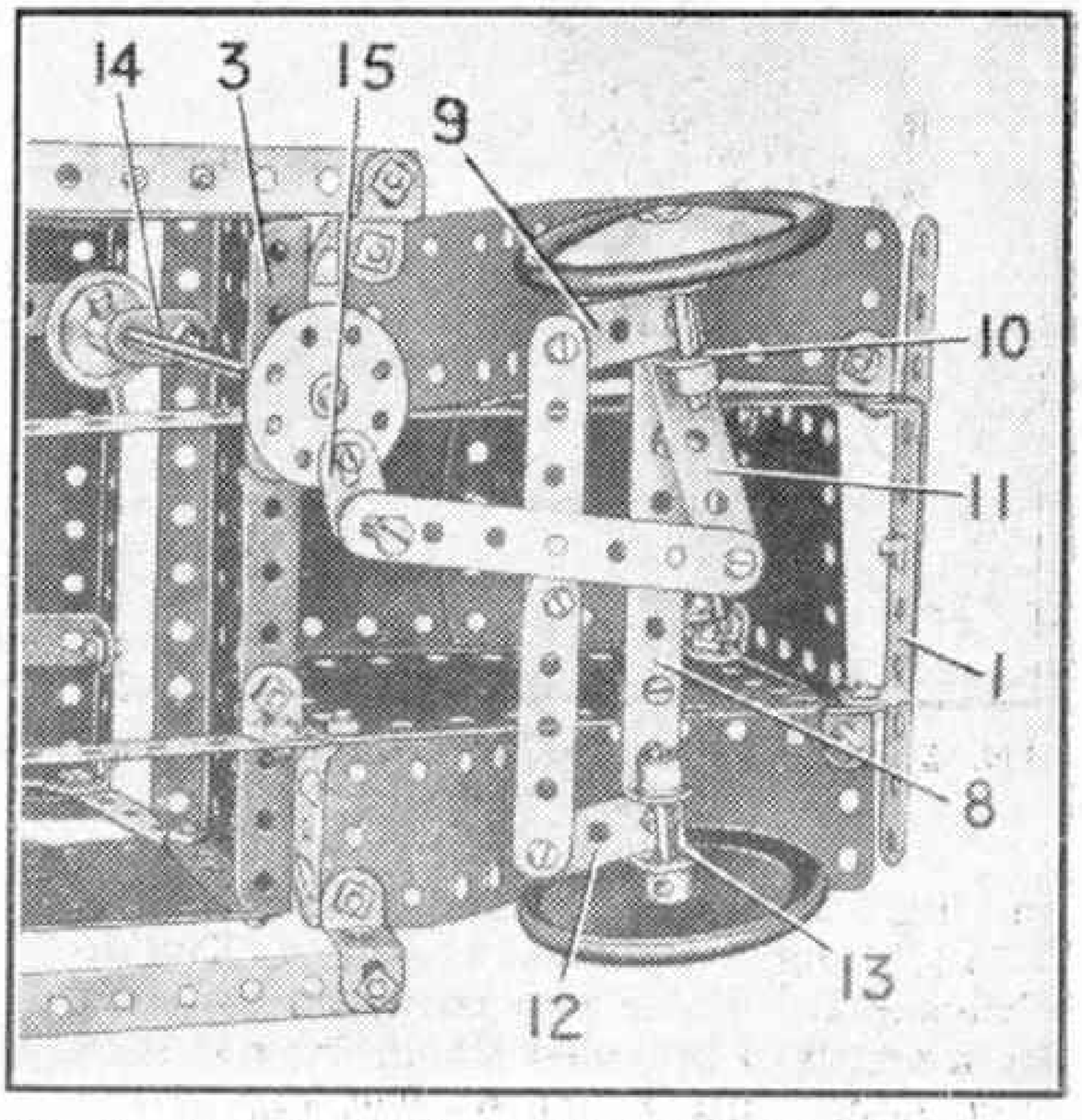


Fig. 1. A very simple steering arrangement specially intended for small model motor vehicles. Its construction is described in detail on this page.

As "lock-nutted" is a term that is often used in model-building, we think it well to explain here exactly what it means. In some models, and especially in building mechanisms, it is necessary to join two Strips or other parts together so that although they cannot come apart, they are not held tightly, but are free to move or "pivot" in relation to each other. To do this the parts are bolted together as usual, but the nut is not screwed up tightly, so that the parts are not gripped. Then to prevent the first nut from unscrewing a second nut is screwed up tightly against it, while the first nut is held with a Spanner. This is the arrangement known as "lock-nutting" and it is a most useful device in Meccano construction.

A ⅜" Bolt is passed through the 1½" Strip 12 and a Double Bracket 13, and is held in the end of the beam 8 by two nuts. The Strips 9 and 12 are connected to a built-up strip consisting of two 2½" Strips joined together.

A 4" Rod fitted with a 1" Pulley and a Bush Wheel is used to form the steering column. This is passed through the Flanged Plate 3 and through a Fishplate 14. A 3½" Strip is now bolted loosely to the Strip 11 and is connected by a Pivot Bolt to a Fishplate 15 bolted to the Bush Wheel. The Bolt holding the 3½" Strip to the Strip 11 is "lock-nutted." The Road Wheels are fixed on 1½" Rods passed through the Double Brackets 10 and 13.

The steering mechanism shown in Fig. 2 is slightly more advanced and is designed for (*Continued on page 46*)

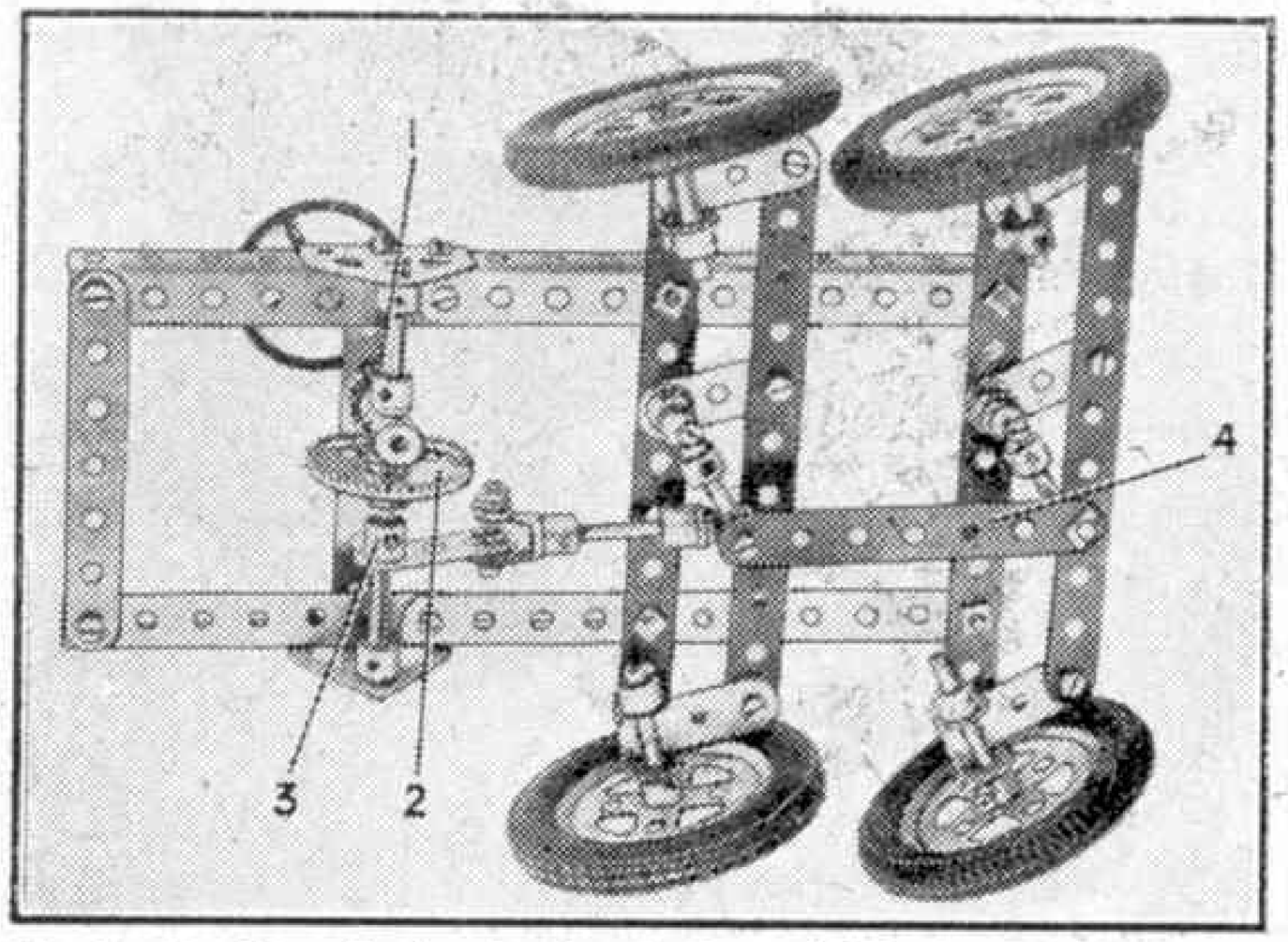


Fig. 2. Another simple steering device suitable for a lorry having two front axles.

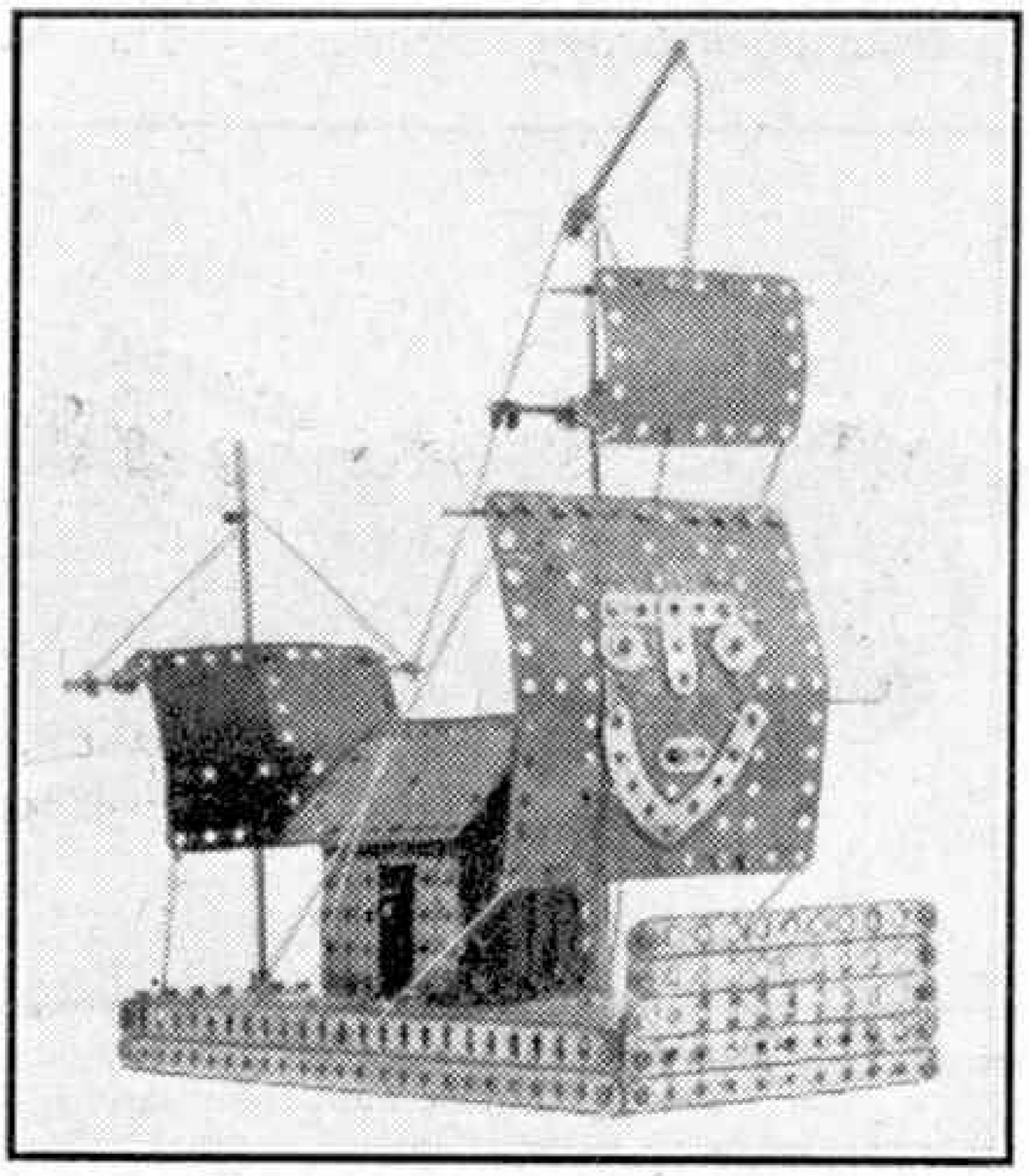
Great Opportunity for Young Model-Builders

No. 3 and No. 6 "Outfit" Competition

THE competition announced here is the first of a series of "Outfit" Contests that we intend to run for the next few months. All these Contests will be arranged on similar lines, except that the sizes of the Outfits will be changed each month. This month prizes are offered for the best models made entirely from either a No. 3 Outfit or a No. 6 Outfit. *Readers who possess larger Outfits may compete, provided that they use only parts included in either the No. 3 or the No. 6 Outfit.* For the guidance of competitors a list of the parts contained in each Outfit is given below.

Entries will be divided into four groups: Section A, for models built from Outfit No. 3 by readers living in the British Isles; Section B, for models built from Outfit No. 6 by readers living in the British Isles; Section C, for models built from Outfit No. 3 by Competitors living Overseas, and Section D, for models built from Outfit No. 6 by competitors living Overseas. *Each Section is open to readers of all ages.*

A separate and complete set of prizes as detailed in the panel on this page will be awarded in each Section of the Contest.



The voyage of the "Kon-Tiki" across the South Pacific inspired J. D. Gostt, Shenfield, Essex, to build this model of the famous craft. Its originality and simplicity earned it a prize in a recent "M.M." Competition.

It is only necessary to send either a drawing or a photograph of the model—the actual model should not be sent. Competitors must enclose with their entry a list of parts used in the model, and must write their ages, names and addresses on the back of each photograph or drawing sent in.

Envelopes containing entries should be addressed "*January Outfit Competition, Meccano Ltd., Binns Road, Liverpool 13.*" A large letter A, B, C or D must be marked in the bottom left-hand corner of the envelope to indicate the Section for which the entry is intended.

Entries for Home Sections A and B will be accepted up to 29th February 1952. The closing date for entries in the Overseas Sections C and D is 30th April 1952.

No. 3 and No. 6 OUTFIT COMPETITION

THE PRIZES

A separate set of Prizes as follows will be awarded in each of the Sections A, B, C and D.

First Prize .. Cheque for £3 3s. 0d.
Second Prize .. Cheque for £2 2s. 0d.
Third Prize .. Cheque for £1 1s. 0d.
Five Prizes each consisting of a Postal Order for 10/6.
Five Prizes each consisting of a Postal Order for 5/-.
Certificates of Merit also will be awarded.

Contents of Outfit No. 3.

2 of No. 1; 6 of No. 2; 9 of No. 5; 5 of No. 10; 2 of No. 11; 8 of No. 12; 2 of No. 15b; 3 of No. 16; 2 of No. 17; 1 of No. 18a; 1 of No. 19g; 4 of No. 22; 1 of No. 23; 1 of No. 24; 2 of No. 24a; 2 of No. 34; 6 of No. 35; 1 of No. 36; 56 of No. 37a; 50 of No. 37b; 6 of No. 38; 2 of No. 38d; 1 of No. 40; 1 of No. 44; 2 of No. 48a; 1 of No. 52; 1 of No. 57c; 4 of No. 90a; 6 of No. 111c; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 4 of No. 142c; 4 of No. 155; 1 of No. 176; 1 of No. 186; 2 of No. 187; 2 of No. 188; 2 of No. 189; 2 of No. 190; 2 of No. 191; 2 of No. 192; 2 of No. 199; 2 of No. 200; 1 of No. 212; 1 of No. 213; 2 of No. 214 and 4 of No. 215.

Contents of Outfit No. 6.

12 of No. 1; 14 of No. 2; 4 of No. 3; 2 of No. 4; 12 of No. 5; 2 of No. 6a; 4 of No. 8; 8 of No. 10; 4 of No. 11; 16 of No. 12; 2 of No. 12a; 6 of No. 12c; 1 of No. 13; 1 of No. 14; 2 of No. 15; 1 of No. 15a; 2 of No. 15b; 4 of No. 16; 2 of No. 17; 4 of No. 18a; 1 of No. 18b; 2 of No. 19b; 1 of No. 19g; 1 of No. 19h; 5 of No. 22; 2 of No. 22a; 1 of No. 23; 1 of No. 23a; 1 of No. 24, 4 of No. 24a; 2 of No. 34; 14 of No. 35; 1 of No. 36; 130 of No. 37a; 120 of No. 37b; 20 of No. 38; 2 of No. 38d; 2 of No. 40; 1 of No. 44; 1 of No. 45; 2 of No. 48; 8 of No. 48a; 2 of No. 48b; 1 of No. 51; 1 of No. 52; 2 of No. 53; 2 of No. 54; 1 of No. 57c; 4 of No. 59; 2 of No. 80c; 2 of No. 90; 4 of No. 90a; 2 of No. 111; 2 of No. 111a; 6 of No. 111c; 1 of No. 115; 4 of No. 125; 2 of No. 126; 4 of No. 126a; 4 of No. 142c; 1 of No. 147b; 4 of No. 155; 1 of No. 176; 1 of No. 186; 1 of No. 186a; 1 of No. 186b; 4 of No. 187; 4 of No. 188; 4 of No. 189; 6 of No. 190; 2 of No. 191; 4 of No. 192; 2 of No. 197; 1 of No. 198; 2 of No. 199; 2 of No. 200; 2 of No. 212; 2 of No. 213; 2 of No. 214; 4 of No. 215 and 1 of No. 216.

A Competition Reminder.

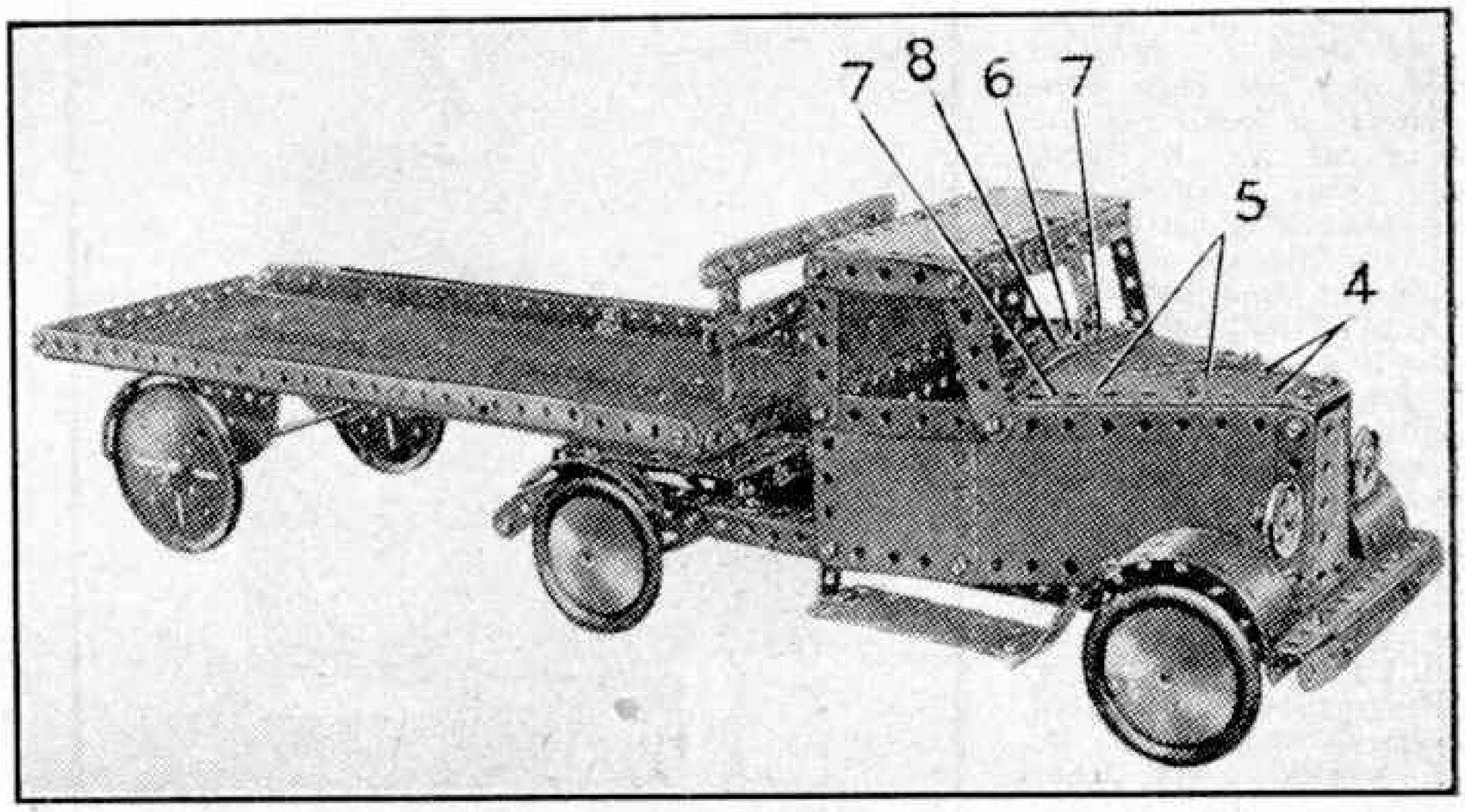
The "Christmas" Model-Building Competition, which was announced in the December "*M.M.*," is still open for entries. *This contest is for models of all kinds built from any number or variety of Meccano parts*, and special Cash Prizes are offered. First, Cheque for £5/5/0d.; Second, Cheque for £4/4/0d; Third, Cheque for £2/2/0d. There are also 20 prizes each of 10/- and 25 each of 5/-.

This Contest is open to readers of all ages in any part of the world. Photographs or sketches of models only are required. Address entries "*Christmas Model-Building Contest, Meccano Ltd., Binns Road, Liverpool 13.*" Closing date: 31st March 1952.

New Meccano Model

Articulated Motor Lorry

OUR new model this month is designed for construction from Outfit No. 6. It is an articulated motor lorry consisting of a tractor unit and a trailer, and is typical of the vehicles most generally used for carrying cargoes from dockyards to warehouses, for which work they are particularly suitable. The tractor unit can be uncoupled from the trailer, so that it does not have to stand idle while the trailer is unloaded at the warehouse, but can return to the docks to be coupled to another trailer already loaded.

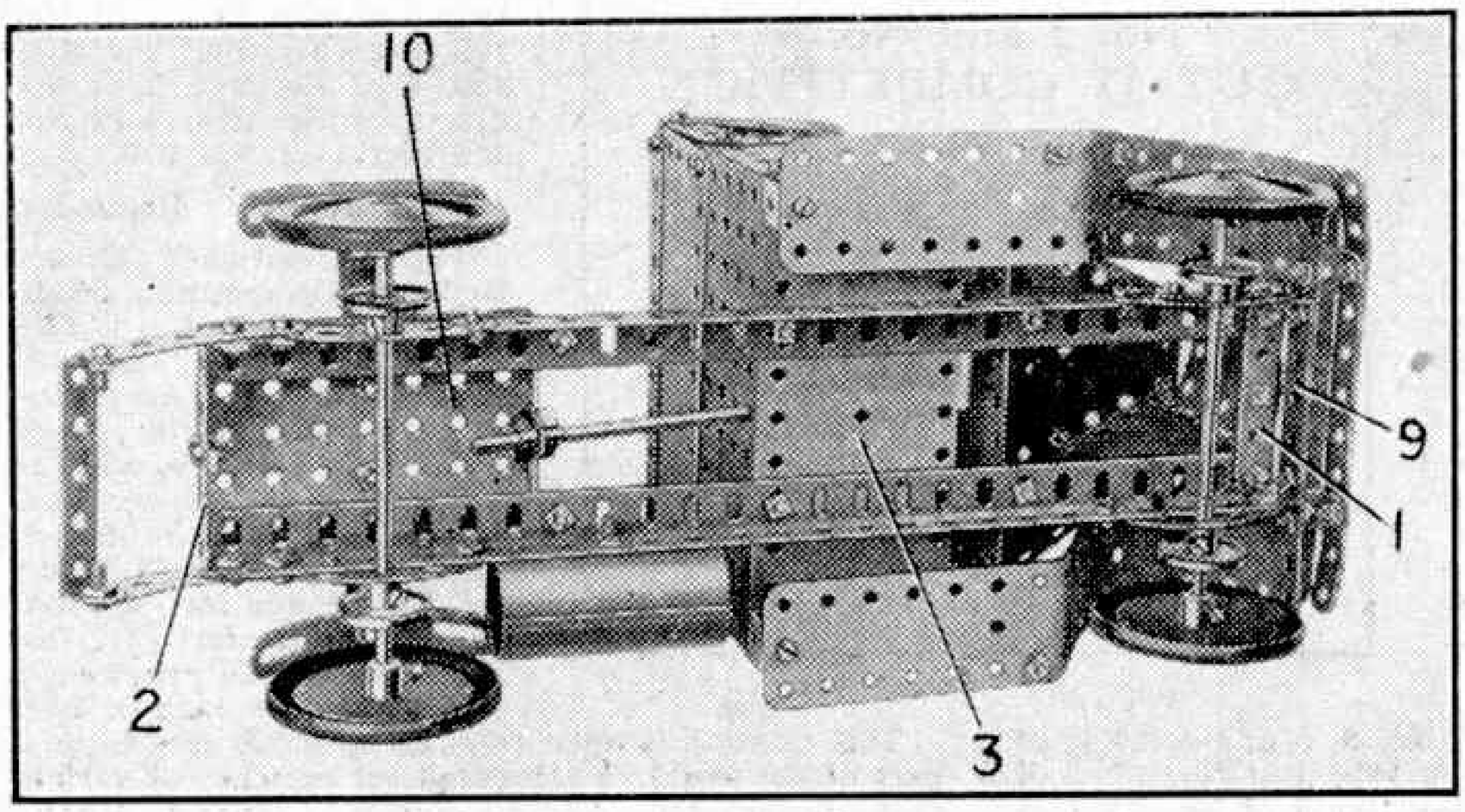


There is plenty of interest in a model articulated lorry such as that shown here. This example can be built from parts in Outfit No. 6.

The chassis of the tractor unit consists of two $12\frac{1}{2}''$ Angle Girders joined at the front by a $2\frac{1}{2}''$ Strip 1 and at the rear by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 2. The front and rear axles are 5" Rods, and they are mounted in $2\frac{1}{2}''$ Stepped Curved Strips and held in place by 1" Pulleys.

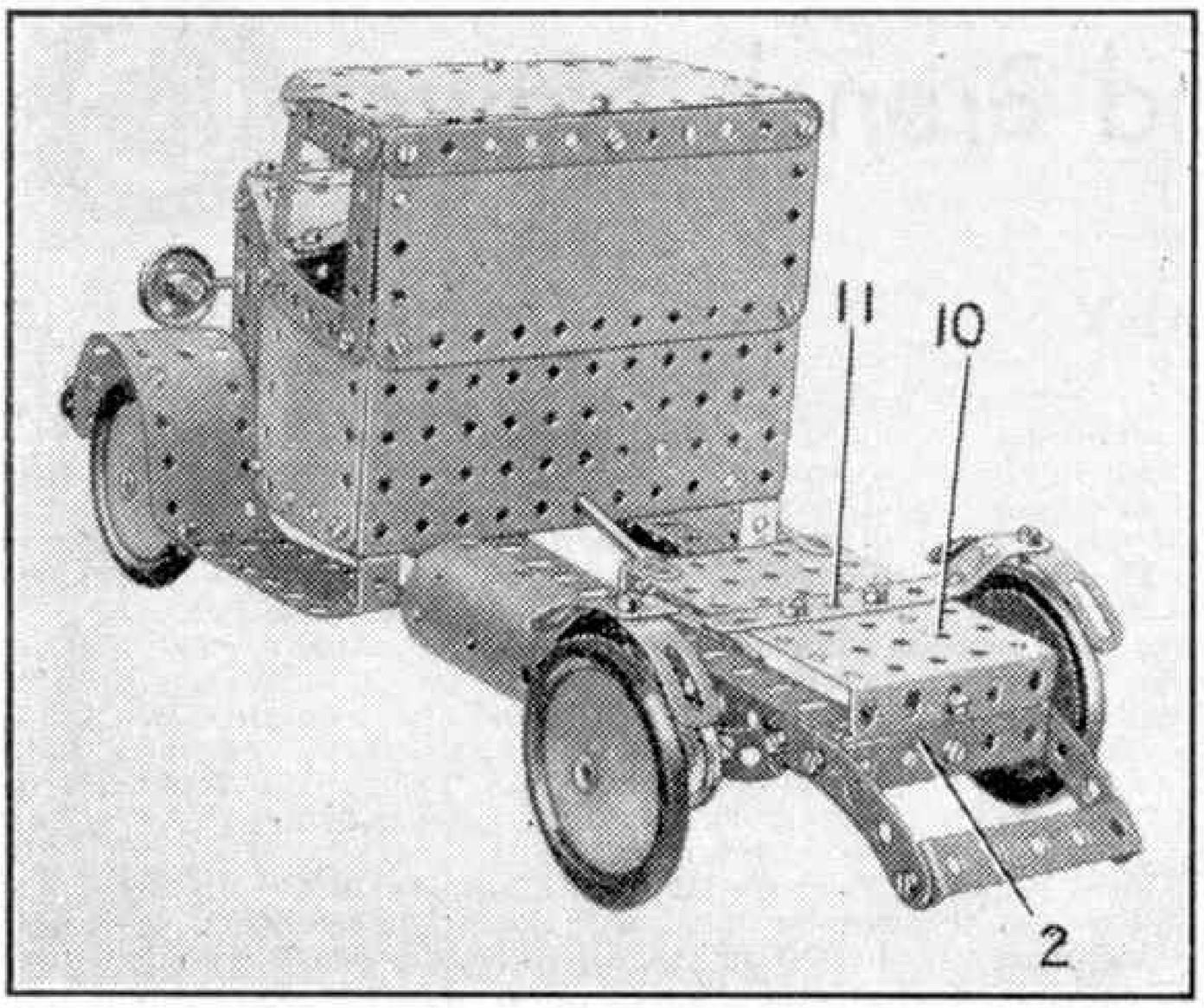
The back of the cab consists of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate and a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate. The bolts holding the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate to the chassis fix also one half of a Hinged Flat Plate 3 that forms the floor. The other half of the Plate provides the front of the cab and is attached to the chassis by Angle Brackets. The cab sides are $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates fixed to the flanges of the Flanged Plate, and attached to Angle Brackets bolted to the Plate 3.

The sides of the bonnet are $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates, which are joined at the front by two $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips. The lower Double Angle Strip is fixed to an Angle Bracket bolted to Strip 1. The radiator is a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate.



The tractor unit seen from underneath.

The top of the bonnet is made from two $2\frac{1}{2}'' \times 2\frac{1}{2}''$ and two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates. The $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates 4 are bolted at an angle to the $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip connecting the bonnet sides. A $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 5 is then attached as shown to each of the Plates 4 already mentioned, and the Plates 5 are



A rear view of the tractor unit.

held together by a bolt that fixes also an Angle Bracket 6 and two 2½″ Strips 7. The outer ends of Strips 7 are attached to the sides of the cab by Angle Brackets, and two further 2½″ Strips 8 conceal the overlapping corners of Plates 5.

The cab is completed by window frames formed by 2½″ and 3″ Strips fixed as shown. The top edge of the windscreen consists of 3½″ Strips, overlapped and fixed to Angle Brackets bolted to the window frames.

The front wings and running boards are made from 5½″ × 1½″ Flexible Plates, two of which are used at each side. They are curved as shown and attached at the rear to a Double Bracket fixed to the 5½″ × 2½″ Flanged Plate. The front edge of the wing is bolted to a 5½″ Strip that is joined to a 2½″ × ½″ Double Angle Strip 9 bolted between the chassis Girders. The front bumper is formed from two 5½″ Strips bolted to Double Brackets fixed to the wings.

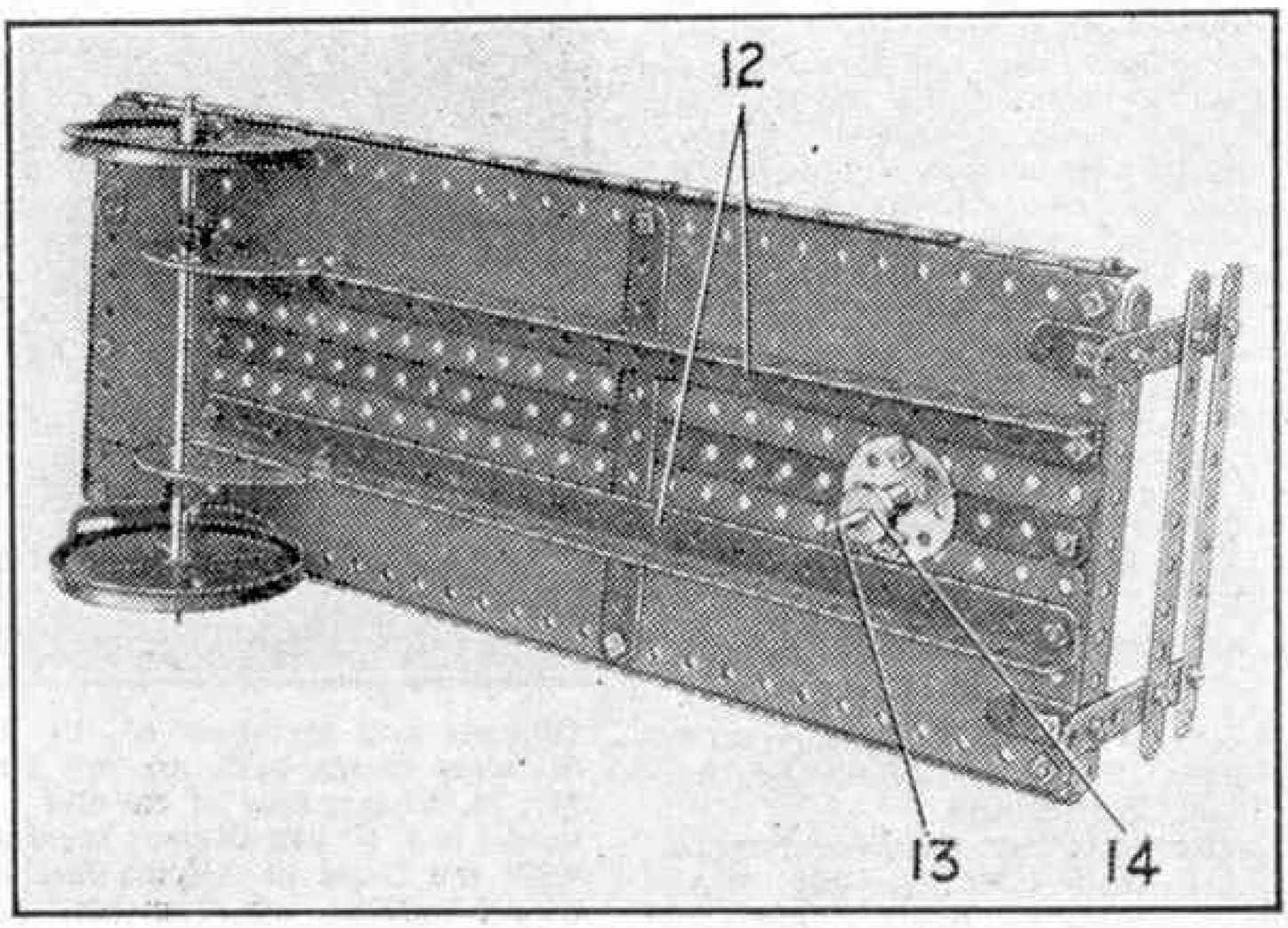
The headlamps are 1″ loose Pulleys held to Collars by ⅜″ Bolts. A ¾″ Bolt is passed through the bonnet on each side and held by a nut, and the Collar is then screwed on the shank of the Bolt and fixed by a second nut.

A 3½″ × 2½″ Flanged Plate 10 is attached to the chassis by two ½″ Reversed Angle Brackets and by a Fishplate bolted to the Double Angle Strip 2. A 5½″ Strip 11 joined to the Flanged Plate 10 supports the rear mudguards, which are represented by Formed Slotted Strips.

The chassis of the trailer, or more correctly semi-trailer, consists of two 12½″ Angle Girders 12, connected at the front by a 5½″ Strip. The platform is made from two 12½″ × 2½″ Strip Plates bolted direct to the chassis, with a 12½″ Strip fixed between them. The platform is extended at the rear by two 4½″ × 2½″ Flexible Plates overlapped. The platform rails are 12½″ and 5½″ Strips, and they are bolted to Angle Brackets.

The road wheels are fixed on a Rod mounted in Semi-Circular Plates joined to Fishplates bolted to the chassis. The coupling device is a Rod 13 held in a Bush Wheel. This Rod fits in Flanged Plate 10, and carries a ½″ Pulley 14.

Parts required to build the Articulated Lorry: 9 of No. 1; 12 of No. 2; 4 of No. 3; 3 of No. 4; 12 of No. 5; 4 of No. 8; 2 of No. 9; 6 of No. 10; 4 of No. 11; 15 of No. 12; 2 of No. 12a; 3 of No. 12c; 1 of No. 14; 2 of No. 15; 1 of No. 15a; 1 of No. 18a; 2 of No. 19b; 4 of No. 22; 2 of No. 22a; 1 of No. 23a; 1 of No. 24; 6 of No. 35; 120 of No. 37; 10 of No. 37a; 6 of No. 38; 2 of No. 48; 3 of No. 48a; 1 of No. 52; 1 of No. 53; 2 of No. 59; 2 of No. 90; 4 of No. 90a; 2 of No. 111; 2 of No. 111a; 4 of No. 111c; 3 of No. 125; 4 of No. 187; 3 of No. 188; 4 of No. 189; 5 of No. 190; 1 of No. 191; 4 of No. 192; 2 of No. 197; 1 of No. 198; 2 of No. 214; 4 of No. 215; 1 of No. 216.



An underneath view of the trailer.

Club and Branch News

WITH THE SECRETARY

A HAPPY NEW YEAR!

Although in some Clubs and Branches social events of the Christmas and New Year season remain to be enjoyed, in most cases these are now past and eyes are turned to the events of the second of the two Winter Sessions. Now is the time for making real progress on general lines, with new programmes of intensive model-building or train operations as the central features of activities. I hope that for all the New Year will bring with it prosperous and happy times, and indeed that this will be the case also with every member of the Guild and H.R.C. individually as well as those of Clubs and Branches.

HOW TO GAIN IN STRENGTH

In many respects this is the brightest and busiest time of the year, with enthusiasm running high and new members joining freely. Every Club or Branch member should now make it his business to introduce a friend or an acquaintance to the movement. Bringing newcomers into co-operation with existing members is a double service. On the one hand it increases both the value and the pleasure of model-building, or Hornby or Hornby-Dublo Train operation, for the recruit; on the other it strengthens the Club or Branch by adding to it new and keen members, full of bright ideas to make the meetings happier and livelier.

Perhaps the greatest gain of all from recruiting is that the new members will become a source of strength in the organisation of a Club or Branch. This is especially the case when the newcomers are young. I have often said that unless a Club or a Branch gains new members continuously it cannot continue a successful career, but I must say it again, even at the risk of becoming wearisome. Without recruiting no organisation can ever hope to become permanently strong and progressive.

START NEW CLUBS AND BRANCHES NOW

In districts where there are no Clubs or Branches efforts should be made now to form them. Once a keen Guild or H.R.C. member sets a project of this kind on foot he always finds others ready to help. All that is wanted is a good start. Any enthusiast who wishes to form a Club or Branch therefore should just write to let me know, and I will then arrange for the inclusion in the "*M.M.*" of a notice of his scheme, so that others interested can join in the good work. There is ample room for more Clubs and Branches, and no limit to the fun that these provide.

MECCANO CLUBS RECENTLY AFFILIATED

FRATTON BOYS M.C.—Leader: A. A. Foster, Foresters' Hall, Fratton Road, Portsmouth.

LEITH ACADEMY PRIMARY SCHOOL M.C.—Leader: Mr. K. Gray, M.A., 51, Captains Road, Liberton, Edinburgh.

CLUB NOTES

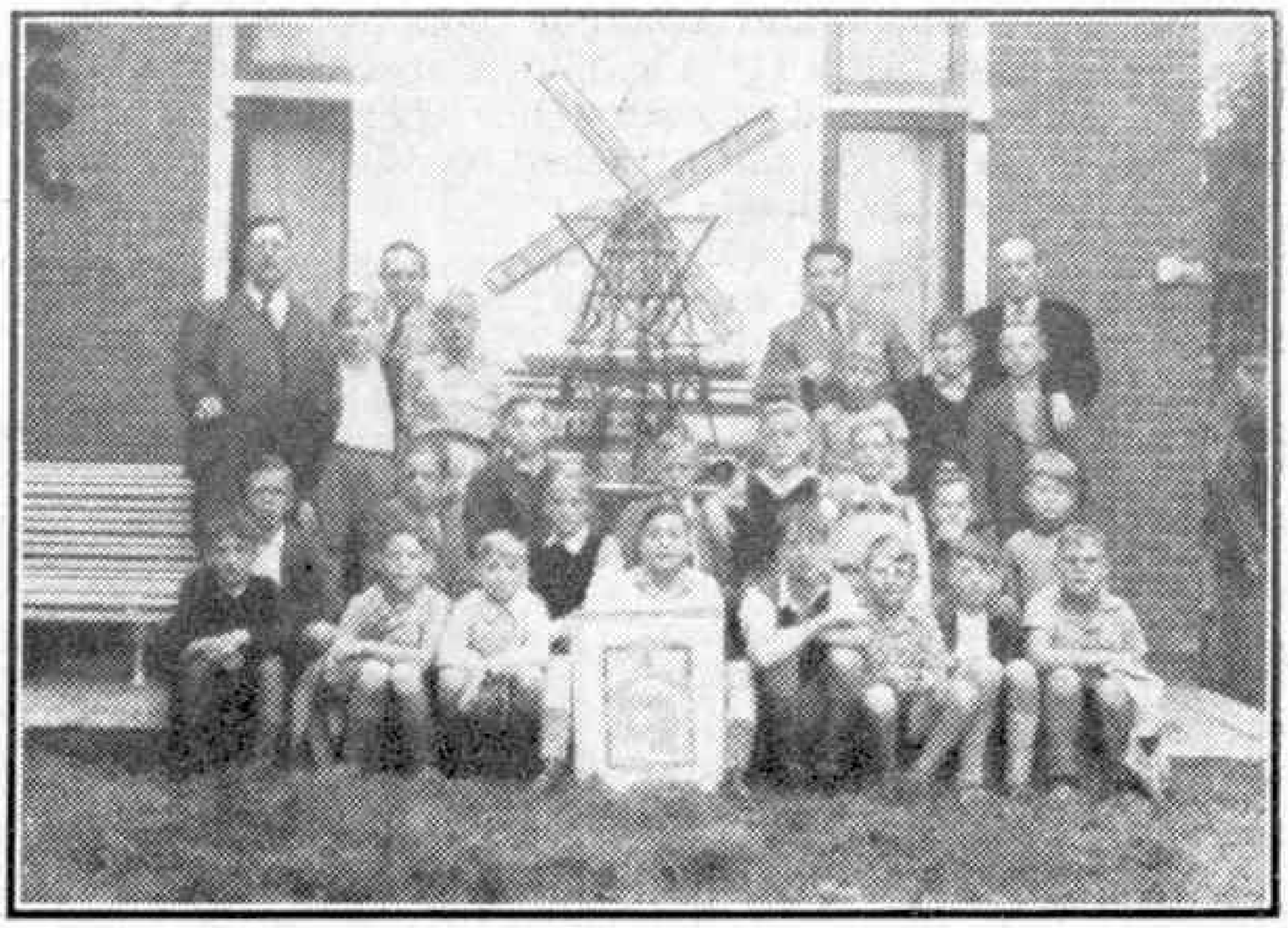
CRYPT GRAMMAR SCHOOL (GLOUCESTER) M.C.—Model-building Competitions continue. The President and former Secretary examine each entry and give it marks, care being taken that members with small Outfits get full opportunities of winning prizes. Record entries of high standard have been received. Good Visits also have been enjoyed. Club roll: 40. *Secretary:* W. Jackson, 234, Stroud Road, Gloucester.

TYNECASTLE SCHOOL (EDINBURGH) M.C.—Many new members have joined the Club, all eager to build models for display and in competitions. Other programme features suggested by members have included Woodwork and Table Top Photography. Club roll: 30. *Secretary:* Brian Hoxton, 18, Robertson Avenue, Edinburgh 11.

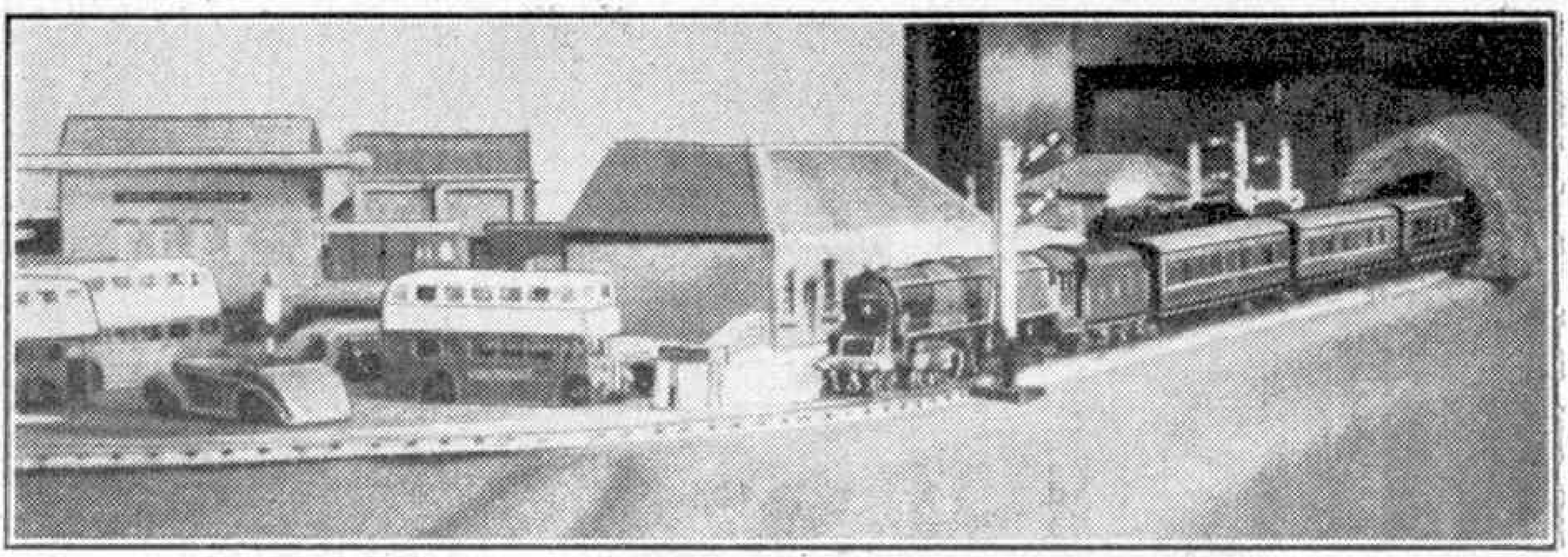
FRATTON BOYS (PORTSMOUTH) M.C.—Great progress has been made, with good model-building. A display arranged in the Club's headquarters attracted more than 100 visitors. More members are wanted, and enthusiasts interested should apply to the Leader and *Secretary:* Mr. A. A. Foster, Foresters' Hall, Fratton Road, Portsmouth. Club roll: 10.

AUSTRALIA

MAYLANDS M.C.—Models built by members were shown at the Children's Book Week display in Perth Town Hall. One model operated by a penny-in-the-slot mechanism raised over £6, which was presented to the Spastic Children's Welfare Fund. A club float representing a large Meccano model of a Dutch Windmill, which slowly revolved and was illuminated, took its place in the W.A. Youth Pageant at the Royal Show. Radio, Table Tennis and other sections continue active, and members have also enjoyed Film Shows and Outings. Club roll: 40. *Secretary:* Ron Fletcher, 10, Harrow Street, Maylands, Perth.



Officials and members of the Memoka M.C., Monnikendam, Holland. Standing at the back are Mr. Koek, Mr. E. Visser, Mr. J.v.d. Geer and Mr. M. Visser, four of the five Leaders, and on the left of the windmill model is J. P. van Dieren, Secretary. This enterprising Club was affiliated with the Guild in August last and already has an imposing record of model-building achievements, which has aroused the greatest interest in the Monnikendam district



The Hornby-Dublo layout of G. Francis, Leicester, is arranged on a table. Miniature buildings and lineside accessories provide a realistic setting for the "Duchess of Atholl" and her train.

HORNBY RAILWAY COMPANY

By the Secretary

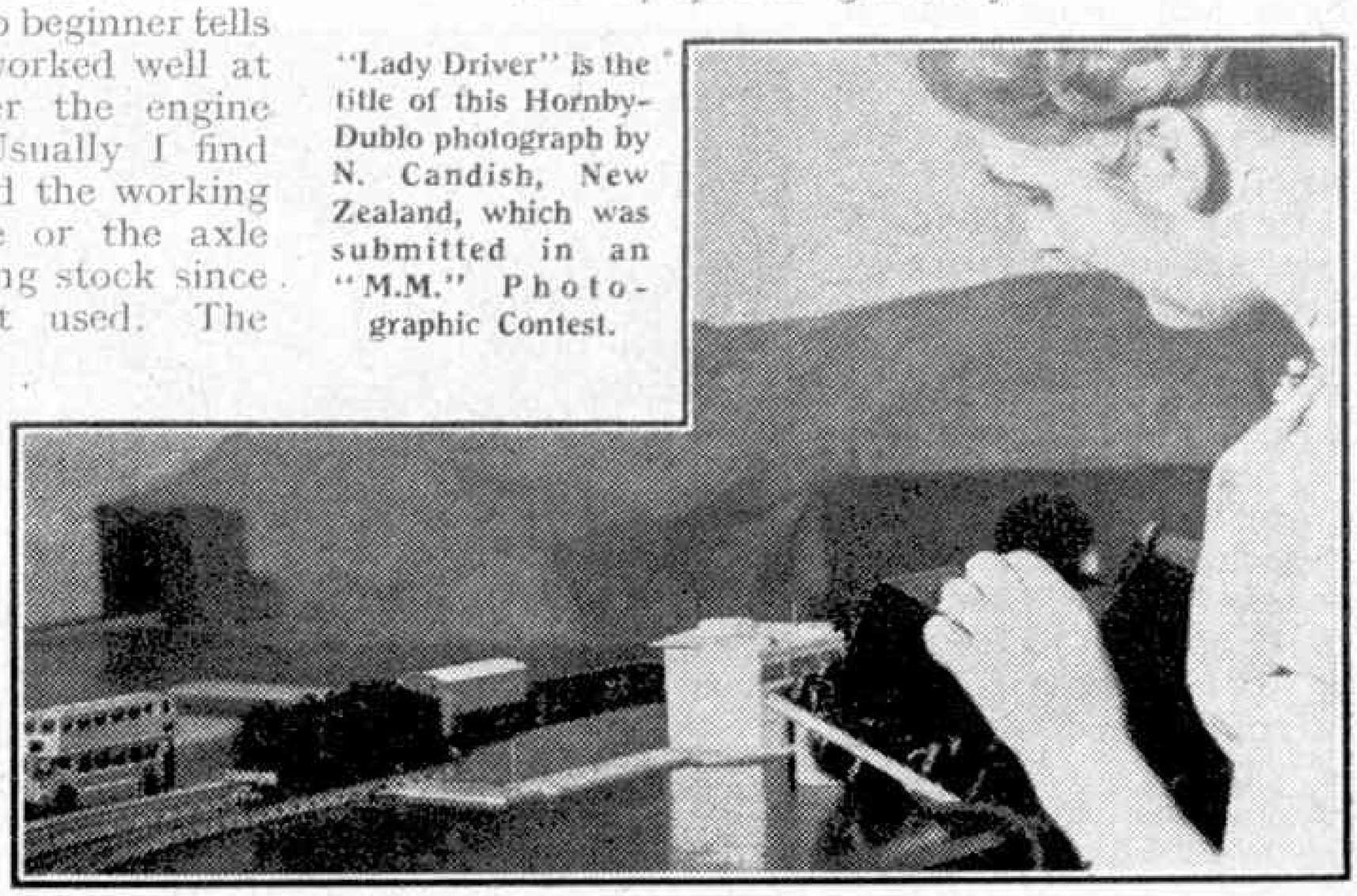
About Your Trains

AS one of the developments mentioned by the Editor last month there now falls to me the pleasant task of talking, personally as it were, to H.R.C. members, Hornby and Hornby-Dublo owners alike. I see many pictures of the layouts of members, and of those operated in H.R.C. Branches, and hope to receive more photographs of this kind, as every month I want to deal with one or two of these.

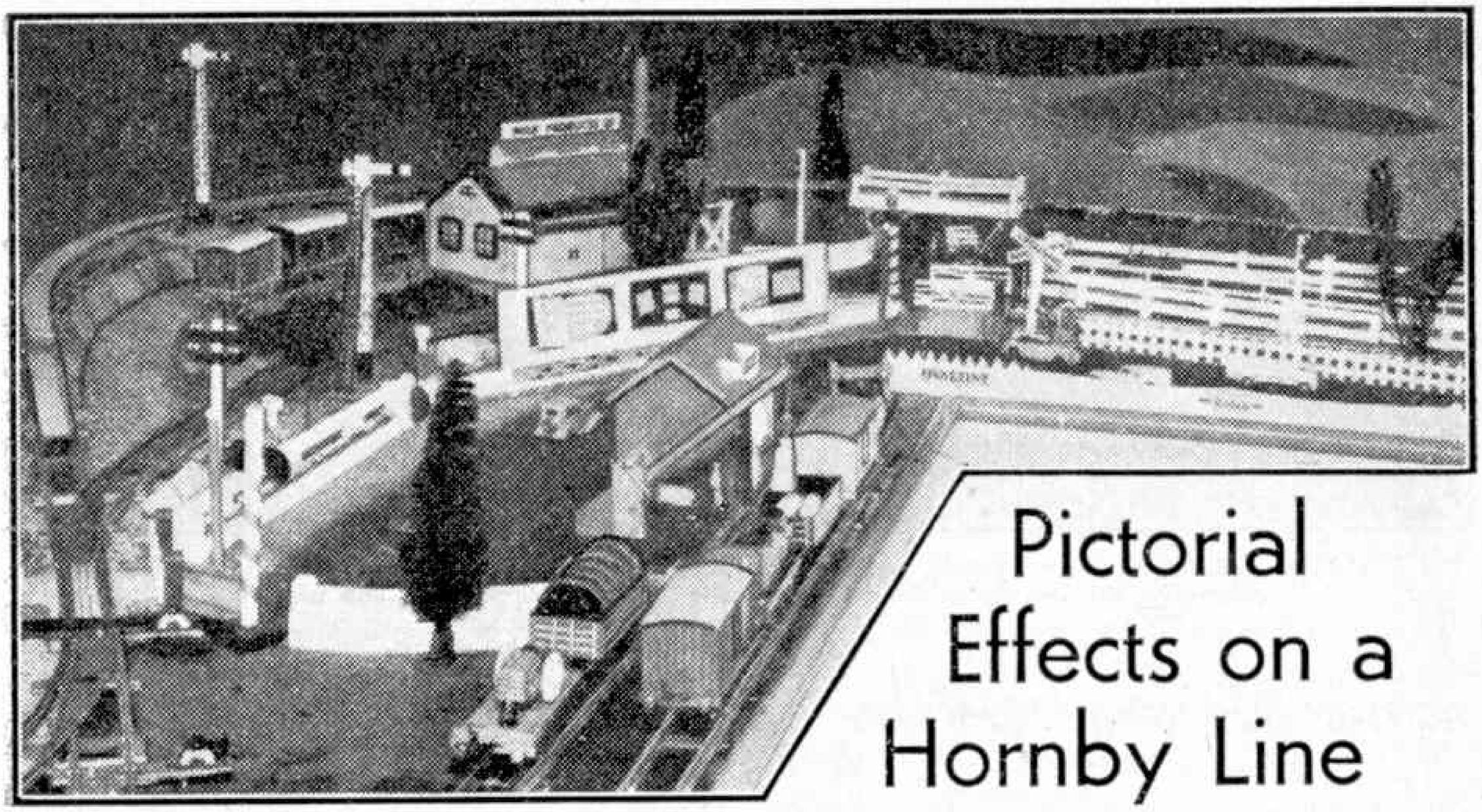
Many of you who are Hornby-Dublo railway owners have just begun train operations, but how many have read the instruction leaflet included in their train sets? I know very well the thrill of getting the wheels turning, but do not forget that the leaflet is meant to help you to obtain the *best* results from your equipment in the shortest possible time.

Sometimes a Dublo beginner tells me that his train worked well at first, but that later the engine became sluggish. Usually I find that he has not oiled the working parts of the engine or the axle bearings of the rolling stock since the train was first used. The instructions tell you exactly how this should be done. Perhaps it is the rail heads, wheel treads or the collector shoes that have become somewhat dirty, so that the engine does not pick up speed. Whatever the cause the instructions should put you right, and if they don't you can always write to me.

What can be done by the enthusiast who makes a practice of dealing with his train properly right from the start is suggested by the illustrations on this page. The lower one shows the layout of a New Zealand enthusiast, which is simple, but is neatly and carefully arranged. The system of which part is shown above is more advanced, with good station buildings and accessories, but I am sure that its owner G. Francis, Leicester, will agree that whether a system is large or small, the basis of its success lies in good running, secured as a result of care and attention to the track, stock and equipment generally.



"Lady Driver" is the title of this Hornby-Dublo photograph by N. Candish, New Zealand, which was submitted in an "M.M." Photographic Contest.



Pictorial Effects on a Hornby Line

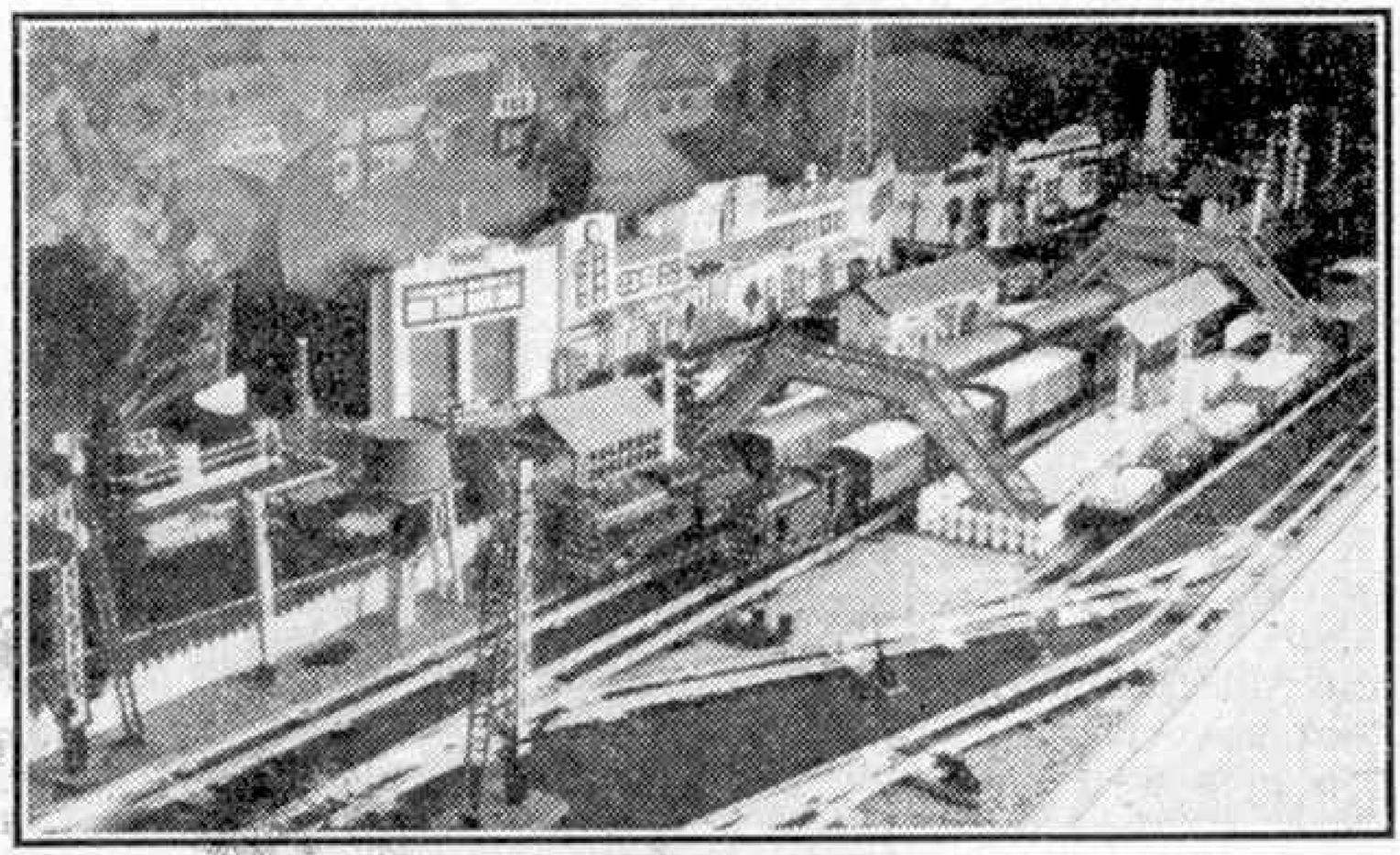
FEW Hornby railway owners are content for very long to leave their original layouts in an undeveloped state. Either the addition of more track or more stock, or the improvement of the lineside, helps to increase the realism of the system. If all these developments can take place more or less together, then the layout soon changes from a rather elementary track into a railway system.

A good idea of what can be done is shown by the pictures on this page. These feature parts of the Hornby railway built up by *"M.M."* reader A. George, of Te Kuiti, New Zealand. The system has the advantage of a permanent baseboard, and the track has been developed by the addition of Points to form loop lines, sidings and yards. A specially interesting combination of Points appears in the lower picture.

Good use is made of the standard Hornby Accessories, and various buildings and other pieces of equipment for the layout have been made at home. Thus in the upper illustration a milk depot and a goods station are examples of this home construction. Elsewhere on the layout there is an engine shed, also made at home, and many lineside features such as fencing, which is made to fit in with the standard Level Crossing gates.

Prominent alongside the railway, and seen clearly in our lower illustration, is a series of models of shop fronts and other town premises. These are not modelled in complete depth, but arranged so that they stand up boldly in front of the scenic background. There is much to be said for this type of relief work, which is effective and yet does not occupy too much space.

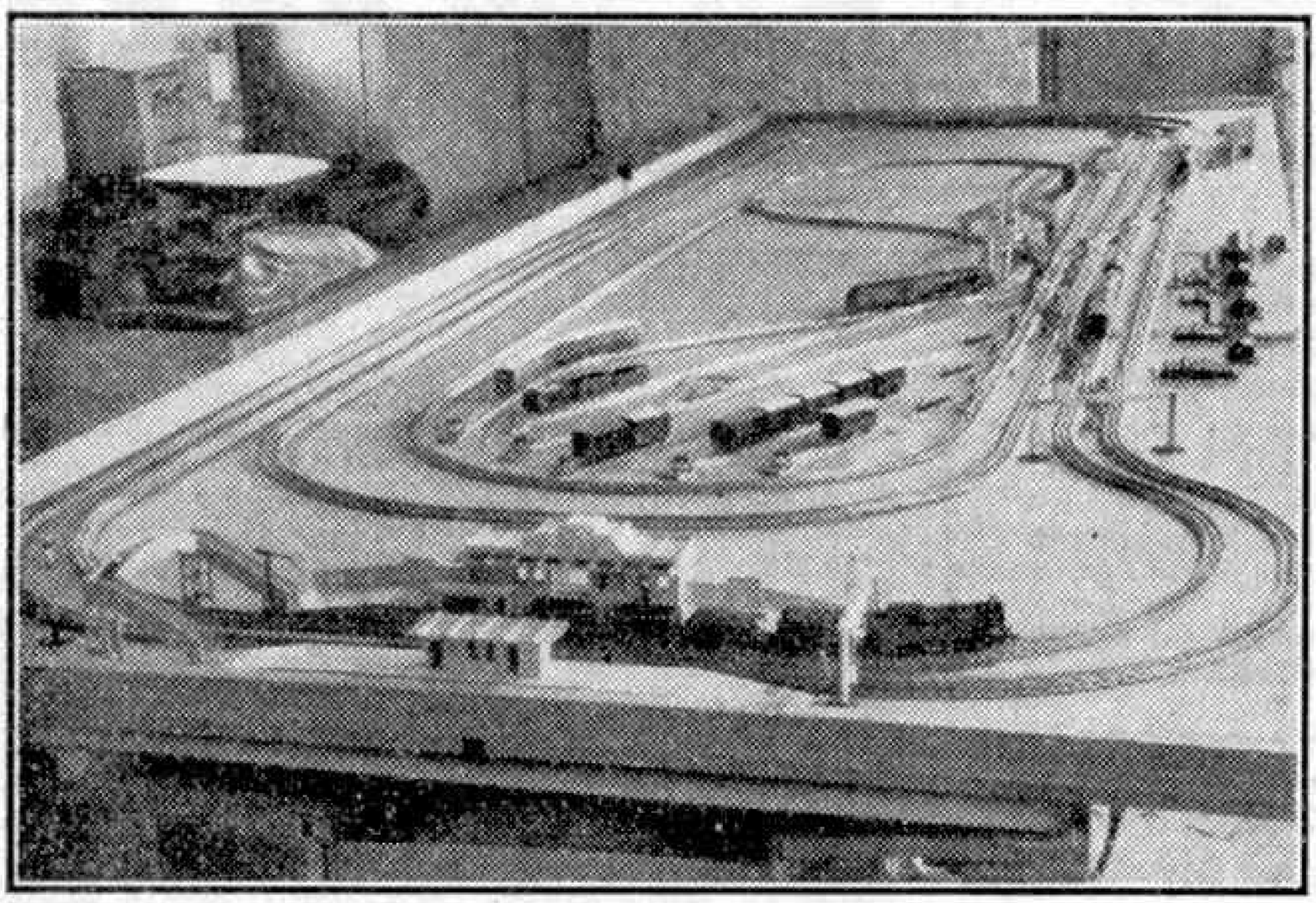
Good running is made by the various Hornby Locomotives shown and there is plenty of rolling stock to keep them busy. Various lineside buildings are served by their own "private sidings," in which stand vehicles suited to the traffic.



The possibilities of Hornby layout developments are well shown in these pictures of the system of A. George, Te Kuiti, New Zealand. Photographs by courtesy of Desgranges Studios.

A Hornby-Dublo Main Line Layout

NO doubt many Hornby-Dublo owners will cast an envious eye on the long stretches of main line on the layout shown on this page. Some may consider that the side of the system opposite to the Controllers is rather bare and empty. It should be remembered that on a real main line trains run comparatively long distances between stations and this is exactly the effect secured here, for the baseboard, in two parts, has a total length of 16 ft. and is 5 ft. wide.



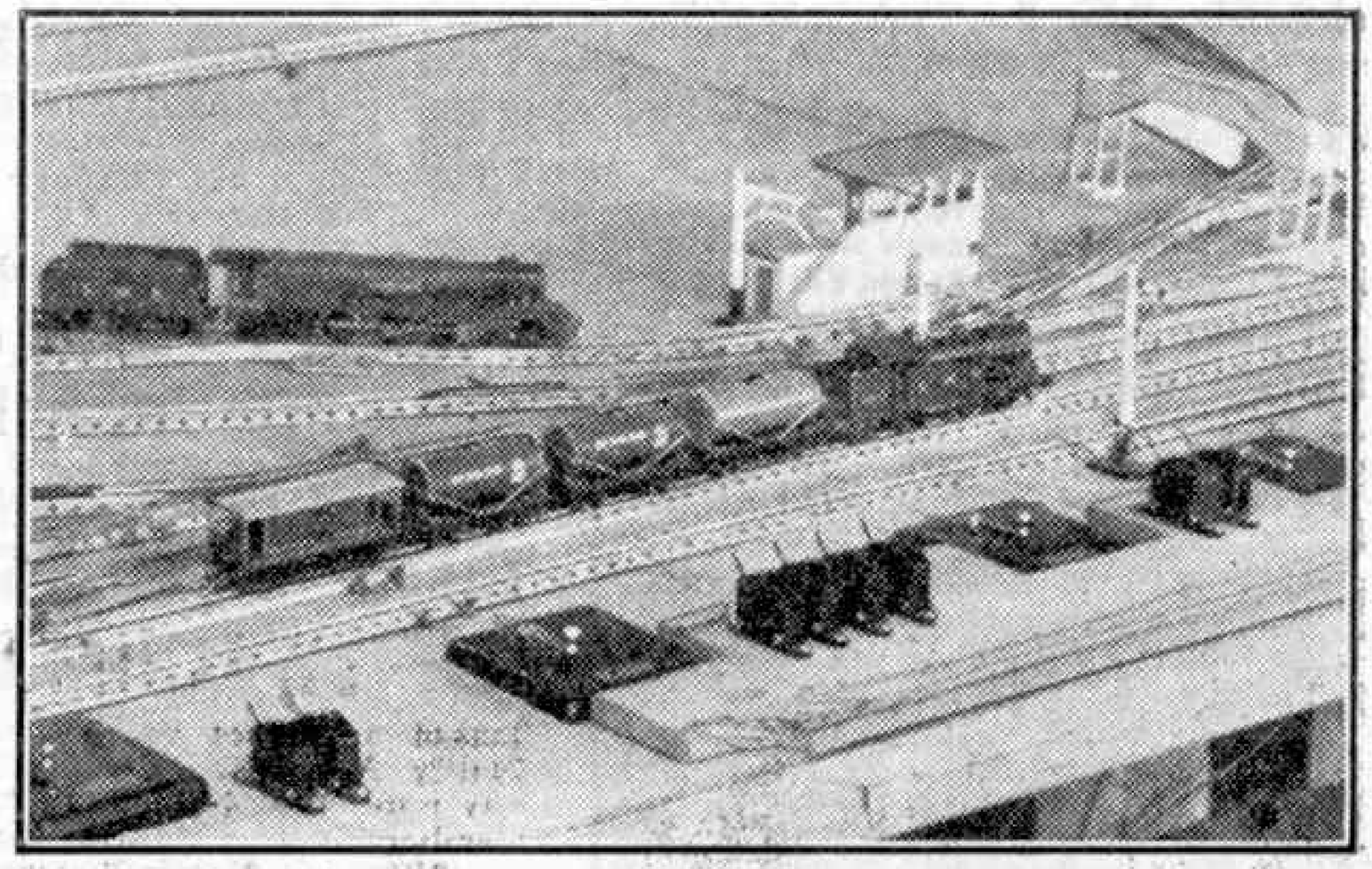
This remarkably complete view shows the Hornby-Dublo layout of Peter Hodgson, Launceston. The photographs are by courtesy of L. W. Hobson, Chester.

The system was developed by Mr. J. P. Hodgson, Launceston, Cornwall, for his son Peter. The general plan of the track can be seen fairly well in the upper picture. The main line, which is double, follows the usual oval course, and at the end nearest the camera there is a Through Station, with an Island Platform.

There are two further tracks inside the main running lines and from the innermost of these a series of sidings is thrown off. In addition, at the opposite end is an "S"-shaped return loop. This can be used for turning engines, or even complete trains, when required. It will be noted that shunting and the making up of trains, and other similar movements, can be carried out well clear of the main running tracks. This is a matter of great convenience in operating, especially where several youthful enthusiasts form the staff of the "Control Office," each of them in charge of a main section.

Good use is made of the standard Isolating Rails and Switches, and the latter are grouped conveniently alongside the Controllers as shown in the lower picture. There are running connections between the main circuits so that trains can pass from one to the other, the necessary insulating gap being incorporated in the centre rail between the connecting Points.

Five locomotives are in service and there is sufficient rolling stock for reasonably realistic working.



A close-up view of the control arrangements. Note how the Controllers are mounted so that only their tops show above the baseboard.

BARGAIN DISCOUNT APPROVALS!

We offer the largest and best selections of approvals you have ever seen—two large sheets of singles and a book of sets. They're post free one way, too, and a generous discount is allowed off purchases. All picked copies. "Wants" lists of SINGLE stamps welcomed. We will include what we can. Why not give them a trial? There's no obligation to buy and further lots are sent ONLY on request.

THE BIRKDALE STAMP CO.
104, Liverpool Rd., Southport, Lancs.

PTS Postal Business Only

Build your collection THE NEW MERCURY *Way!*

THE "NEW MERCURY" APPROVAL SERVICE

offers you

- **Fine stamps—attractively displayed and reasonably priced**
- **Beautiful and interesting issues**
- **Single stamps and sets**

IN FACT — the stamps you want at prices you can pay.

PTS We invite you to send for a "NEW MERCURY" Booklet on 10 days approval. See for yourself—there is no obligation to buy.

PHILIP J. DYKE 35, BUCKLEIGH AVENUE LONDON S.W.20

64 PAGE STAMP ALBUM FREE

Here's a FREE Stamp ALBUM for you. This magnificent offer is for one month only, so send IMMEDIATELY. It is the ideal album for beginners or for holding duplicates. The cover is most attractively designed in TWO-COLOURS, there are 64 PAGES containing 120 full-sized illustrations with spaces for new issues. It will hold over 1,200 stamps, INDEXED and contains much useful information. Remember, supplies are strictly limited, so send TO-DAY for this absolutely FREE GIFT. Enclose 6d. for packing and postage and request our famous Approvals together with illustrated price list of albums, packets and sets.

LISBURN & TOWNSEND LTD. (MM). West Kirby. Wirral

Grand Surprise Packet FREE!

Map, Ship, Triangular and Air Stamps

The whole collection free to those requesting our famous approvals and enclosing 2½d. for postage.

L. E. THOMPSON
2, WESTERN GARDENS, LONDON W.5

FREE — FRUIT & FLOWERS

Fine assortment of stamps showing pineapples, bananas and other tropical fruits; including latest issues with Andorra "Edelweiss," also Bulgaria "Sunflower," etc. **All these absolutely free.** Just send 3½d. for postage and price list and ask to see our famous "½d. UPWARDS" approvals. Write to-day to:

CAPT. M. CAMPBELL (Dept. MM)
58, HIGH STREET, WATFORD, HERTS.

£1's

WORTH FREE! 20 Unused, over 25 years old. (C. V. over £1). Request Approvals. Post. 2½d.
G. H. BARNETT, LIMINGTON, YEOVIL

FREE — 100

STAMPS ALL DIFFERENT including Jet Bomber, Skymaster Plane, Railway Engine and other Fine Stamps to all applicants requesting Bargain Discount Approvals enclosing 4d. for postage, etc. (Without approvals 1/-).

A. HUGHES, 34, LOCHALINE STREET, LONDON W.6

FREE—2/- Gold Coast K.G. VI

The above High Value stamp will be given free to all genuine applicants for our famous ONE PENNY APPROVAL BOOKLETS of BRIT. COLONIALS. These Booklets abound with JUBILEES, PEACE, CORONATIONS, SILVER WEDDINGS and U.P.U. as well as the latest K.G. VI stamps. Many Bargains as usual. N.B.—Enclose 2½d. stamp for Postage.

S. FENLEY LTD., 250, Charminster Rd., Bournemouth

★ CHANNEL ISLES ★

JERSEY

MINT SET 1943, ½d., 1d., 1½d., 2d., 2½d., 3d., also 1948, 1d., 2½d. These 8 stamps for 7/6.

HILLIER, 10, ARTHUR ROAD, MARGATE

STAMP COLLECTION FREE

Many valuable sets and pictorials incl. **NICARAGUA TRIANGULAR, Cape of Good Hope, Western Samoa,** Chinese overprints, **Abyssynia,** Lundy Is., Mauritius.

ALL FREE. Send 3d. postage, ask for approvals.

Roston (H), 106, St. Dunstan's Road, London W.6

N.Z. HEALTH STAMP FREE

Showing our two Princesses. This scarce **MINT** 1944 issue and other attractive Commems. will be sent to all applicants for my Approvals who enclose 2½d. postage.

D. J. Palmer (M.10), Highwood Hill Camp, Mill Hill, N.W.7

FREE!!! ★

Queen Juliana (Netherlands) **packet,** postage, etc. 2½d.

J. THOMPSON, 42, BOURNEMOUTH ROAD, BLACKPOOL

FOREIGN STAMPS

100 diff. 1/-; 250 2/-; 500 — 3/6; 1,000 — 10/-; 1,000 mixed stamps 5/-.

50 diff. either Austria, Belgium, Denmark, Dutch, Brit. Colonials, China, Japan, Italy, Germany, Sweden or Czech., **1/-; 100 2/-; 200 4/-.** List 1d. **Hand, Rosebery Rd. Epsom.**

NEW COLONIAL PICTORIALS FREE!

Send postage for my 50% DISCOUNT APPROVALS.

M. Theobald, 6, Dell Corner, West Drayton, Middlesex

THIS FINE SET OF SEYCHELLES FREE

Unused and **Free** to collectors asking to see our **AMAZING Quality** Approvals. Send 3d. for our postage and lists. You may join **"THE CODE STAMP CLUB".** Sub. 1/-. You **rec. Badge.** Membership Card, listing **fine gifts** and Approvals monthly. **(Gifts** inc. **Plastic Tweezers and Magnifying Glass, etc.)**

WRIGHT'S STAMP SHOP — (M27) — CANTERBURY — Kent

For other Stamp Advertisements see also pages 42 and xvi.

Stamp Collecting

How and What to Collect

By F. E. Metcalfe

AT this time of the year many of us receive an album among our presents. Full of excitement, we rush round to the nearest stamp shop to follow the universal advice to buy the biggest packet we can afford and have some rare fun mounting the stamps we have bought. Anyone we may know is gently tapped for more copies, and our pocket money is swallowed up getting still more stamps.

But there comes a period when we begin to learn something about our hobby. The more we learn, the more clearly we realise that not only are we getting nowhere, but that we never can get anywhere by following the haphazard method of collecting that considers every stamp that comes our way as grist for the mill.

Let me explain this point. There was a time when the advice to buy as large a packet as one could afford might have been sound, but that could only have been thirty years or more ago, when stamps were not nearly as numerous as they are to-day. In the early days of stamps, most collectors carefully gathered any and every stamp that came their way, and still wanted more. This was the reason why they also cut out the impressed stamps on envelopes and postcards—cut-outs they are called—and many of them even went as far as to add seals to their collections.

Now I have laboured this point, because it is very important. Sooner or later, if one is to continue collecting, one must not only have a goal but also must be able to see that some progress is being made towards it. With the thousands of stamps that have already been issued, and the thousands more that are pouring off the world's stamp presses every year, it is simply impossible to get anywhere if one does not limit the scope of the collection.

So to start with, if one wishes to retain any enthusiasm at all for the hobby, the thing to do is to restrict the field of one's collecting activities. Fortunately this is quite easy, if a plan is made out to start with and is then followed carefully.

I can hear someone say, "That's all very well, but I know nothing whatever about stamps, so how can I plan?" Let me try to answer that pertinent question. First you would not be considering the matter at all if you were not interested in stamps, so we can take it for granted that their collection does appeal to you. That being the case, let us consider also what subjects interest you. Do you like ships, or animals, or birds, or flowers, or aircraft, or the thousand and one things that go to make up our lives?

Most people like ships, so let us choose these to illustrate the point. The aim of course is to unite your two interests, which can be done by making a collection of stamps that have ships as their motif. With a loose leaf album, with plain pages, and pocket money of a few shillings a month, you can then get somewhere. If you follow this plan you will be known as a thematic collector, but don't let that horrid synthetic word deter you. It only means that you are collecting to a theme. In the United States you would be called a topical collector, a nicer description although not strictly accurate.

Maybe you want to collect on slightly more general lines, and to have a more grown-up sort of collection. Very well, what about collecting the Commonwealth stamps of the present reign? These form a group that is the most widely collected in the world. It is not a bad idea to choose the stamps of odd countries, or even certain periods, so long as the collection you plan has a limited scope. I cannot insist on that too strongly, for I know why many collectors cease to collect. It is because they take on more than they can manage, and thus lose heart.

Let us suppose that you have decided to collect K.G. VI stamps, what is the first thing to do? I remember hearing a young would-be collector ask a grumpy old dealer that question, and his answer was "Wash your hands." To be quite candid, that advice was pretty sound, for nothing gets grubby sooner than white paper, and nothing looks worse than a grubby stamp collection.

Next month I propose to go into details and explain just how I would set about forming a K.G. VI collection; most of what I will write will apply equally well to the formation of any kind of stamp collection.

In the meantime if Uncle George asks you if you would like a printed album, reply very respectfully, "No Uncle George I would like a plain loose leaf album, as I am going to form a limited collection, so that next year I can show you something which will not be a conglomeration of bits and pieces."

INDIAN ELEPHANTS STAMP FREE

IMPROVE YOUR COLLECTION—FREE!

To all who ask to see a **Selection of Windsor Stamps on Approval** we will send **ABSOLUTELY FREE** this attractive large **INDIAN** stamp just issued. It commemorates the Centenary of the Geological Survey of India, is dated 1851 - 1951 and shows **two enormous pre-historic elephants;** it will add lots of interest to Your Collection to the envy of your friends.

Just write for the **Indian Elephants Stamp Free** and ask to see a **Selection of Windsor Stamps on Approval.** Please enclose 2½d. stamp for posting these to you. SEND NOW to:

WINDSOR STAMP CO. (Dept. M), Uckfield, Sussex

1951 COLONIALS

1951 saw a very fine lot of new issues of British Colonial pictorial stamps. I will send a fine packet of these including the new surcharges from Aden and British Somaliland, Sudan (Ibex), Montserrat (Government House), Dominica (Drying Cocoa) and Tonga (very large map stamp), free to all applicants for approvals enclosing postage. Mention M.M.

R. D. HARRISON, ROYDON, WARE

FREE!

TO ALL COLLECTORS

4 STAMPS OF GOLD COAST

BARGAIN - 50 CHINA 1/3

Send 2½d. Postage

G. P. KEEF — WILLINGDON — EASTBOURNE

FREE! This fine New Zealand issue is FREE to all asking for our Approvals and enclosing 3d. stamp. Write at once to:

FRANCIS CURTIS LTD. (MZ)
226, BAKER STREET, LONDON N.W.1

TEN DIFFERENT U.P.U's FREE. This packet contains **TEN** absolutely different **U.P.U's** including **Three Mint** and **Seven Used.** (Six are Foreign and Four are British Colonials) and is offered absolutely **FREE. DON'T DELAY! WRITE TO-DAY!** Simply request my discount approvals and enclose 3d. stamp. **John H. Abel (MU), 53, Green Close, STURMINSTER NEWTON, Dorset**

FREE GIFT OF STAMPS

to every applicant for approval books. The GIFT contains 30 British Colonials including 8 K.G. VI mint—no Great Britain. Good discount is given and a list of 98 Gifts is sent. These can be chosen by you and vary in value according to the money sent for purchases. They include K.G. VI Silver Jubilees; ALL the Colonial Victory sets mint; and Foreign stamps. 3d. postage please.

C. A. RUSH, 38, Queen's Avenue, Whetstone, London N.20

MYSTERY EXCHANGE PACKETS!

Exchange your "twicers" FREE from our guaranteed unsorted Free Exchange Packets which have circulated the World over. Different, profitable and interesting without payment. Details with 5 different NIGERIA also FREE with APPROVALS. ENCLOSE POSTAGE.

Dealers Supplied. Overseas Agents Wanted.

ASTLEY & CO. (M)
103, CADMAN CRESCENT, WOLVERHAMPTON

GEM APPROVALS

Fine selection of Brilliant Mint Pictorial Stamps, sent Post-Free one way, on 10 days approval. List of books available included free and good discount given. These stamps represent good value and sell quickly—Send your application **now** to:—

GEM STAMP CO.
(Dept. M) 514, Fairfax Drive, Westcliff, Essex

I DO NOT ADVERTISE

Free gifts, but offer Service and Value. Approvals from ½d. upwards. Want Lists—Just state countries and S.G. Cat. Nos. Exchange your duplicates FREE. Details post free.

A. DONNELLY (M), 1, ABINGDON ROAD, LUTON, BEDS.

JAMAICA KG VI PICTORIAL ETC. FREE

High Value stamp showing Sugar Industry and also 10 OTHER STAMPS (Pictorials, scarce stamps, etc.) FREE to approval applicants. Write to-day for this amazing gift. 2½d. stamp please. **The Northern Stamp Company, 8, Rowan Place, New Earswick, York**

100 DIFFERENT STAMPS FREE

(including TRIANGULAR and PICTORIALS)

To Approval Applicants enclosing 2½d. postage.

N. JOHNSON (Dept. M.M.), 19, Hillside, Slough, Bucks.

3,000 STAMPS FREE!!

Send 2½d. for details of this marvellous gift & approvals.

YEOMAN, 18, DEVON ROAD, HERSHAM, SURREY

FREE "WORTH WHILE" OFFER

10 Fine used, LARGE U.S.A. Comms.

Free to all applicants who send 2½d. for postage and ask to see a selection of my "WORTH WHILE" approval sheets. You will be pleased, I know.

JOS. H. GAZE, 10, Pimlico Road, CLITHEROE, Lancs.

SARAWAK

Set FREE. LARGE MINT PICTORIALS. Please enclose 2½d. stamp. Request approvals.

WATSON, 85, Larkswood Road, Chingford, London E.4

FREE

50 different incl. pictorials, value 5/-. Send 2½d. for discount approvals from ½d. each.

G. M. WALKER, 13, BROOM RD., HALE, CHESHIRE

FREE—STAMPS CATALOGUED 5/-
to applicants for ½d. approvals

COX, 17, STONELEIGH PARK ROAD, EWELL

For other Stamp Advertisements see also pages 40 and xvi.

Stamp Gossip

and Notes on New Issues

By F. E. Metcalfe

IT would seem from all accounts that "Capex" the Canadian Stamp Exhibition, went off in great style. As usual at such gatherings, many philatelists found their teeth watering at some of the displays, but one collector at any rate was apparently not particularly impressed by the usual piece de resistance —the 1c. British Guiana 1856 issue. This was described as looking like a rather grubby tram ticket.

Be that as it may, how the Americans do love this most publicised of all postage stamps, for they are able to claim it as the rarest and most valuable stamp in the world; most valuable it is, but it is probably not the rarest, for it is said that there are at least two other different stamps that are also singletons.

This British Guiana stamp is said now to be worth $50,000, though the bidding failed to reach half that sum when it was sent from America to London for sale. Nevertheless that Liverpool dealer who once bought it in a collection fot £110 and later sold it to that great collector Ferrari for £250, little knew what a fantastic figure the stamp would be worth one day. It later passed into the hands of A. Hind, a Yorkshireman by birth, who purchased it when Ferrari's collections were sold in Paris in 1922, for £7,500.

There is an interesting story told in connection with Hind and another copy of the stamp in question. One night a man was said to have visited him in New York, producing a specimen of the 1c. variety and offering to sell it. Hind carefully examined it. Having satisfied himself regarding its authenticity, he bought it, and then burnt it in front of the man who had made the sale. The idea of course was to keep his specimen as the only existing copy. It will never be known for certain if there is any truth in the story or not, for Hind is dead, but during his life many gave credence to the yarn, and apparently he never denied the story.

Perhaps no stamps have received more publicity than those issued for "U.N.O." Several collectors have asked if these stamps are likely to be rare, and if they should invest in a set that will cost them over £1. Well, if it is an investment that a collector is after, he should not buy a set. These stamps really have been produced only for sale to collectors, though of course they can be used for postage by U.N.O. itself in the U.S.A. It was calculated that three hundred thousand dollar's worth would be sold in the first year. This probably will not happen, but after the publicity the stamps have been given quite enough will be sold to prevent their ever being scarce, and as collectors find this out, sets will probably appear on the market at anything round face value.

Collectors and dealers alike continue to criticise the overprinting of St. Helena stamps up to the top value of 10/- for the supposed use of Tristan da Cunha. One stamp magazine has some very pungent remarks to make and the whole affair has been rightly called a racket. No doubt collectors of K.G. VI stamps will buy these stamps, and of course dealers who run new issue services will have to obtain them to cover their customers' wants. Nevertheless, it is a great pity that they cannot be completely boycotted, for while stamps of this kind sell the authorities will continue to issue them; if just for once collectors would refrain, the situation would change overnight, and these pseudo-issues would appear no more.

The South Bank Exhibition is only a memory for many of us, but stamp collectors have something very interesting to keep remembrance of the Festival of Britain green in the form of poster stamps, which as time goes on may be well worth having. One of these is illustrated. It came from an exceedingly well designed sheet of eight stamps, each of which shows a view of London. The design is a credit to whoever was responsible, and the printing of course is first class, for it was done by that great firm of stamp printers, Messrs. Harrison and Son Ltd., who actually print our own stamps.

Apparently other poster stamps are to be issued from time to time, and it is said that views of all the beauty spots of Great Britain will appear in this form. Collectors interested can get full details from "On my Way" Stamps, 19, Minera Mews, London S.W.1. The stamps are quite inexpensive, and they certainly look very well mounted. Perhaps if enough collectors go in for them our own postal authorities may take the tip, and let us have a few pictorial stamps.

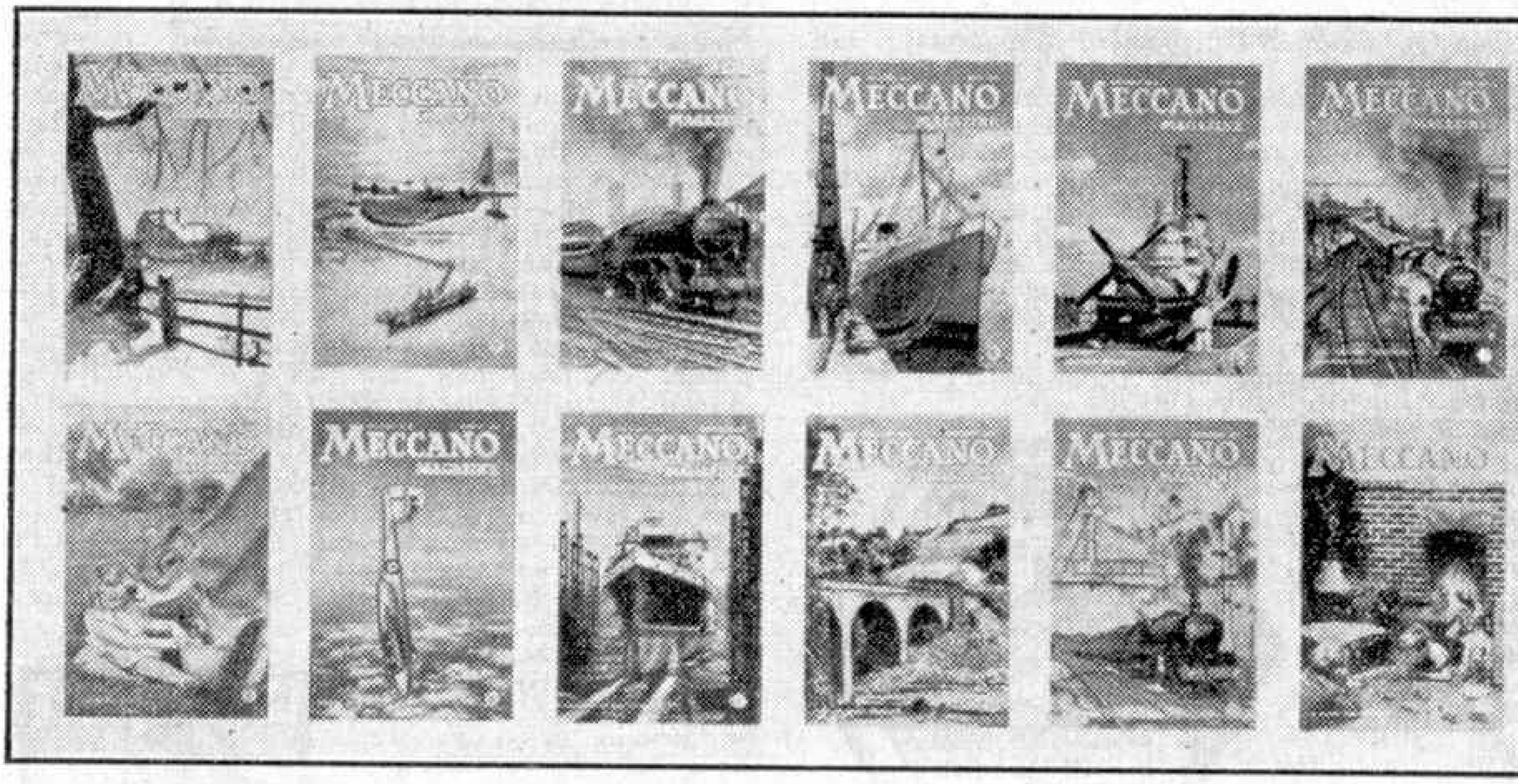
Egypt has produced yet another commemorative set of three stamps, this time to commemorate the "First Mediterranean Games." As usual, while the colours are somewhat garish, the designs are well thought out, and apparently there has not been the usual scramble and rugby scrum to obtain a set at the post office. After being in Gibbons Part 1, for many years, a number of Egyptian stamps were suddenly removed to

(*Continued on page 46*)

Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Which Is Your Favourite 1951 Cover?



Here once more are miniatures of the *"M.M."* covers of the past year. These lack the brilliance of the originals, as they are not in colour, but they will serve to remind readers of their subjects.

The purpose of bringing these covers to the attention of readers is to invite them to take part in a contest based on them. In this they are asked to do two things. The first, A, is to tell us which they like best; the second, B, is to list the twelve in the order of preference that they think will be revealed by the combined votes of competitors.

Entries should be made on postcards, on which the covers must be referred to by the names of the months in which they appeared. It is not necessary for an entrant to place his own choice at the head of the list.

In the two sections of this contest, for Home and Overseas readers respectively, there will be prizes of 21/–, 15/– and 10/6 for the best entries in order of merit, with consolation prizes for other good efforts. Postcards should be addressed *"1951 Cover Voting Contest, Meccano Magazine, Binns Road, Liverpool 13."* Home Section entries should reach us by 29th February, and Overseas Section efforts by 31st May.

Railway Painting Contest

This is a good time of the year for a painting competition. Contests of this kind are always very attractive to readers of the *"M.M.,"* and it is hoped that for this one there will be a record entry. It certainly offers ample scope, its subject is a wide one—a railway scene of any kind.

All entries must be the unaided work of the competitors, whose name, addresses and ages must appear on the back. They must be addressed: *"January Painting Contest, Meccano Magazine, Binns Road, Liverpool 13."*

In each of the Home and Overseas sections there are two divisions, one for readers under 15 years of age and the other for those above that age respectively. In each of these four sections prizes of 21/–, 15/– and 10/6 will be awarded for the three best entries in order of merit, and other good efforts will be given consolation prizes. Closing Dates: Home Section, 29th February; Overseas Section, 31st May.

January Photographic Contest

We enter this month on a new series of photographic competitions. The first of these is a general one, in which readers are invited to submit prints of any subject. Each competitor may submit only one photograph, which must have been taken by him, and on the back of his print must be stated exactly what the photograph represents.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate overseas sections, and in each section prizes of 21/–, 15/– and 10/6 will be awarded. Entries should be addressed: *"January Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing dates: Home Section, 31st January; Overseas Section, 30th April.

Competitors who desire their entries to be returned should read carefully the paragraph at the top of this page.

Competition Results and Solutions

HOME

AUGUST 1951 HOLIDAY STORY CONTEST

1st Prize: D. Harkness, Liverpool 11. 2nd Prize: W. M. Alexander, Middlesbrough. 3rd Prize: B. Lee, Manchester. Consolation Prizes: L. B. Whittaker, Blackpool; D. Feasley, Feltham; J. Jones, Gateshead.

AUGUST 1951 NAMED TRAINS CONTEST

1st Prize: C. Whitton, Broadway. 2nd Prize: C. E. Wrayford, Bovey Tracey. 3rd Prize: R. P. Walford, Newton Abbot. Consolation Prizes: A. D. Bird, Scarborough; E. F. McLellan, Sunderland; H. J. Casker, Scunthorpe.

SEPTEMBER 1951 PHOTOGRAPHIC CONTEST

1st Prize, Section A: J. Hampson, Farnborough; Section B: B. Rigg, Hagley. 2nd Prize, Section A: M. S. Worcester, Horsham. Section B: J. Shelmerdine, Greenfield. 3rd Prize, Section A: J. R. Tottle, Taunton; Section B: I. Taylor, Dunstable. Consolation Prizes, Section A: R. K. Evans, Hessle; W. R. Prince-Smith, Driffield; D. M. L. Morgan, New Malden; H. E. Williams, Kenley. Section B: I. Fell, Worcester; J. M. Henshall, Wakefield; C. Alexander, Summersdale; J. Biddles, Leicester.

OVERSEAS

MAY 1951 CROSSWORD PUZZLE

1st Prize: J. T. Pope, Lower Mitcham, Australia. 2nd Prize: G. R. Churches, Walkerville, S. Africa. 3rd Prize: E. Saunders, Blenheim, New Zealand. Consolation Prizes: R. P. Stricke, Christchurch, New Zealand; R. Hayward, Waterford, Irish Republic; G. W. D. Fielder, St. Andrew, Barbados.

MAY 1951 AIRCRAFT NAMES CONTEST

1st Prize: M. Doherty, Dublin, Irish Republic. 2nd Prize: F. Dean, Bombay, India. 3rd Prize: G. E. Watkinson, Gibraltar. Consolation Prizes: B. Johnson, Geraldine, New Zealand; B. C. Walker, Calgary, Canada; R. G. Baker, Dunedin, New Zealand.

JUNE 1951 PHOTOGRAPHIC CONTEST

1st Prize, Section A: R. A. Hopkins, Brussels, Belgium; Section B: J. Ellis, Johannesburg, S. Africa. 2nd Prize, Section A: N. P. Sanganeria, Calcutta, India; Section B: B. Poynton, Blackrock, Irish Republic. 3rd Prize, Section A: R. J. Turner, Bahia, Brazil; Section B: C. Beavan, Southampton, Bermuda. Consolation Prizes: N. G. Jayaram, Bangalore, India; P. McCullen, Drogheda, Irish Republic; S. M. Gregory, East London, S. Africa; F. Poynton, Waterford, Irish Republic; P. Leah, Gwelo, S. Rhodesia.

SOLUTIONS

MARCH 1951 PRICE CODE CONTEST

Keyword	S	U	T	H	E	R	L	A	N	D
	1	2	3	4	5	6	7	8	9	0

APRIL 1951 LOCOMOTIVE CONTEST

The chief characteristics of the Canadian locomotive forming the subject of this Contest, which differ from those of British practice, are as follows:

The locomotive is of the 4–8–2 wheel arrangement; this is not used in Great Britain. The engine has bar frames (not visible); in British practice, plate frames are almost universal. The centre coupling without side buffers, the pilot or cowcatcher, and the headlight are characteristic of overseas locomotives; none of these features are standard in Great Britain. Typical North American features are the warning bell, the very high running plate, in this instance carrying the number of the locomotive, and the continuous handrail at the front end. The conical smoke-box is a feature of these recent Canadian locomotives that is not used in Great Britain. Twin air brake pumps are set below the running plates, and there is a generator for electric lighting ahead of the cab; these features do not appear on British engines generally. The sandbox is on top of the boiler, a position not used in Britain. The design of the coupled wheels shows a notable difference from the usual British practice.

The tender has twelve wheels and a round water tank; the largest British tenders have eight wheels and more or less rectangular tanks. The Canadian cab is enclosed completely and is entered through a side door. On British tender engines the cab is more open and is entered from the back.

JUNE 1951 LOCOMOTIVE CONTEST

1. L.M.R. Class 8P 4–6–2 "Princess Coronation" class. 2. L.M.R. Bowen Cooke 0–8–0. Ex-L. & N.W.R. 3. L.M.R. Parallel-boiler 4–6–0. "Royal Scot" class. 4. L.M.R. 0–6–0 tank class 2F. Ex-North London Railway. 5. E. & N.E. 4–4–0 class D2. Ex-G.N.R. 6. W.D. "Austerity" 2–8–0. Ex Ministry of Supply. 7. W.R. Early "Saint" class 4–6–0. 8. S.R. Q1 class "Austerity" 0–6–0.

JULY 1951 RAILWAY WORDS

1. An insulated 6-wheel fish van. 2. Western Region 4-cylinder 4–6–0, designed by G. J. Churchward. 3. A shock absorbing goods van. 4. Lancashire and Yorkshire Railway. 5. Old type L.N.W.R. goods brake van. 6. Ex-L. & S.W.R. 0–6–0 700 class. 7. The Liverpool Overhead Railway. 8. Brake Van used only on ballast trains. 9. Deposit of ash and cinders in smoke-box of locomotive. Tea is also known as char among railwaymen. 10. Ex-Highland Railway 0–6–0.

JULY 1951 COMMERCIAL VEHICLES

1. Austin. 2. Albion. 3. Dodge. 4. Commer. 5. Leyland. 6. Morris-Commercial. 7. Dennis. 8. Guy. 9. Crossley. 10. Maudslay. 11. Sentinel. 12. Thornycroft.

"Oh! I do love them." An excellent photograph by W. Forsch, Stoke-on-Trent, who was awarded 1st Prize in the May 1951 Photographic Contest, Section A.

Snow Houses in the Arctic—(*Continued from page 3*)

Igloos such as this would prove invaluable as field hospitals, command posts, sleeping quarters and for a dozen other military purposes.

The Eskimo knows little about electricity. He lights his igloo with oil-lamps, and reflects sunlight into it by placing a pillar of snow opposite a block of polished ice let into the walls. The military snow house would have the advantage of electric lighting.

Meanwhile the igloo is being tested for peace time purposes. Architects and engineers are trying to solve the problems of building in the Arctic, one of which is a lack of timber, by compressing sawdust and snow into bricks ranging in size from that of ordinary household bricks to great blocks five or six feet across for the construction of, for example, warehouses and workshops.

These experiments are producing encouraging reports. Birch Lindgren tried to improve on the Eskimo method of igloo building. As he is an architect he should have succeeded, but as he himself put it: "There is only one way of building an igloo—the Eskimo way." And the men entrusted with the work of defending the Arctic are to-day using the methods of the Eskimo builder.

For this article and the accompanying illustrations we are indebted to Polar Photos, London.

Toll Road Relics—(*Continued from page 11*)

while to measure distances he had a "waywiser" made for him—a large wheel which he trundled along, and which recorded the miles by means of a mileometer operated by the wheel. This oddity is now preserved at Knaresborough.

London's last toll road was freed in 1872, but a few of the toll houses remain there, even nowadays. One example is near the "Spaniards Inn" between Hampstead and Highgate. By 1882 the London-Brighton road was freed, and although a number of toll bridges and private toll roads are still to be found, the maintenance of the King's Highway has been out of the hands of turnpike trusts since 1895.

The place where *Finis* was written to this chapter in the history of road communications was the Isle of Anglesey. It was a fitting spot for the conclusion of that era, in view of Telford's work in carrying the road from London to Holyhead so successfully. Near Holyhead the turnpike system which he had helped to establish drew its last breath, and the wooden gates where countless vehicles had been stopped for tolls were publicly burned.

The Schull and Skibbereen Railway—(*Continued from page 29*)

these engines pitched and tossed when running at almost any speed.

In 1888 the line was classed as a light railway and some of the restrictions regarding types of locomotives to be used were modified. Consequently the next engine ordered was a more or less standard type 4–4–0. This was No. 4 "*Erin*," and it had the distinction of being the first engine in Ireland to have a Belpaire fire-box. It is illustrated on page 28. The cylinders were 12 in. by 18 in., the coupled wheels were 3 ft. 4 in. diameter, and the total wheelbase was 15 ft. 3 in. The engine's weight was 24 tons.

Another No. 1, a 4–4–0, was built in 1906 to replace the old engine of that number and was named "*Gabriel*." It had outside bearings to the coupled wheels, which were 3 ft. in diameter. This engine was scrapped in 1936. An almost similar engine to it was supplied in 1914 to replace the old No. 3. This engine, which was called "*Kent*," and No. 4 are still in existence. At the present time there is one other engine on the system, an 0–4–4 from the Cork and Muskerry system, where it was No. 6. It is now No. 6S. This engine was rather tight for the sharp curves, but in spite of this it did quite a lot of work.

The company had first and third class coaches, but there were only ten of them altogether. Three ran on diamond-frame bogies, two of them having end platforms. The remainder of the coaches were of the four-wheeled type, and some of these too had end platforms. Two of the four-wheelers managed to get painted in C.I.E. colours. The freight vehicles numbered 48. An unusual feature of some of the goods vehicles and one or two of the coaches was that they were supported by small volute springs.

Model-Building Made Easy—(*Continued from page 32*)

use in a model lorry fitted with twin front axles. In this case there are two axle beams, each of which is a 5½" Strip, and in a simple model they can be bolted direct to the sides of the chassis as shown on page 32.

The wheels are mounted on 1½" Rods, which are known as "stub" axles and are supported in Double Brackets lock-nutted, as already described, to the ends of the axle beams. A 1½" Strip is placed between the lugs of each Double Bracket so that these parts pivot as complete units. The ends of the 1½" Strips are lock-nutted to the ends of 5½" Strips as shown.

On the lower end of the steering column is a ½" Pinion 1 that is arranged to engage the teeth of a 1½" Contrate 2. This Contrate is fixed on a cross shaft that carries also a Crank 3, and a Small Fork Piece is connected to the arm of the Crank by a ½" Bolt passed through the slotted hole.

A 1½" Rod fixed in the Fork Piece is fitted with a Swivel Bearing, and the pivoted boss of the Swivel Bearing is fixed on a 1" Rod held in a Handrail Coupling. A ¾" Bolt is then pushed through the Handrail Coupling and a Crank, and these parts are held together tightly by a nut. The shank of the ¾" Bolt is then passed through the axle beam and fitted with lock-nuts. A similar assembly of Handrail Coupling and Crank is used for each axle, and they are linked together by a 3½" Strip 4.

Any model-builder who would like further information in connection with these mechanisms, or of any other matter connected with Meccano model-building, should write to "*Spanner, Meccano Magazine, Binns Road, Liverpool 13*," who is always delighted to advise Meccano users and help them to obtain the greatest pleasure from their hobby.

Stamp Gossip—(*Continued from page 43*)

another section of this catalogue. As not everybody wanted to spend several shillings just to get a list of Egyptian stamps, many collections were neglected, if not abandoned. Interest is picking up, however, and it is quite possible that those despised collections may again come into their own.

One of the illustrations on page 43 shows the design of the most interesting stamp that has been issued this year, as far as British collectors are concerned. I refer of course to the "Royal Visit" stamp of Canada. There has been a good deal of criticism about this stamp. But all that is surely rather unfair, for the Canadian Post Office had very little time in which to operate. I wonder what our own Post Office would have produced in similar circumstances. Look at our own commemoratives, produced with plenty of time to spare, for the answer.

Our final illustration is another simple, but effective little stamp from Australia.

"M.M." SPRING BACK BINDERS

A small number of spring back binders to hold 12 copies of the "*M.M.*" are available from Meccano Ltd., Binns Road, Liverpool 13. These are in full bound rexine, lettered in gilt on the front with the title "MECCANO MAGAZINE."

The binders are ideal for keeping copies of the Magazine clean and ready for immediate reference. Price, including purchase tax, etc., 7/6 each.

Fireside Fun

"It's rubbish to say that brown eyes show one thing and blue eyes another. The colour just doesn't mean a thing."

"What about black eyes. They tell you something, don't they?"

* * * *

"It's time to go now, Willie. Just say good afternoon to your little friends."

* * * *

"I want a house that is a mile or more away from any other."

"Oh, we can find one to suit you, sir. Going to practise the simple life, I suppose."

"No. I want to practise the trombone."

* * * *

"You would save a lot of money if you bought me a bike, dad."

"How do you make that out, son?"

"Well, look at the shoes I shouldn't wear out with so much walking."

* * * *

"Can you direct me to the Northland Bank, my boy?"

"Yes, sir. I'll do it for half-a-crown."

"Half-a-crown? Nonsense, I'll give you threepence."

"Sorry, sir. Hardly enough for a bank director."

* * * *

"Good-bye, dear," said the stout lady to her friend as she prepared to get on a bus. "I hope I'll see you again soon."

"Don't worry, mum, you will," interrupted the bus conductor. "This bus is full."

* * * *

"Fank you, no. Only my eyes is hungry now."

BRAIN TEASERS
NUMBER THIS OFF

Here is what seems to be a formidable division sum, and to make things worse, there are letters in it instead of numbers. Can you find out what happens to the "RADIO TIMES" when divided by ODOOSO, whatever that may be?

```
ODOOSO) RADIOTIMES(OPMES
        ODOOSO
        -------
        OORTOMI
        OSAPPSP
        -------
        IIDAEM
        TMMMSM
        -------
        OOIEESE
        OOIEESE
        -------
```

Fortunately the puzzle is not really so difficult as it looks. Two of the numbers can be spotted immediately by the sharp-eyed—one of them actually occurs 18 times—and after that everything should be comparatively easy. V.A.D.

* * * *

YOU ARE WARNED

Now let us try a pyramid, in the form of a series of words, the first of one letter, the second of two letters, and so on, each of the asterisks in the accompanying figure eventually being given a letter. The letters of each word are those of the word above it, re-arranged as necessary, with a further letter added.

```
        *
       * *
      * * *
     * * * *
    * * * * *
   * * * * * *
```

The clues in this pyramid, beginning with the one letter word, are as follows: A single letter; Much the same as the first word; Pale; Die away; Indian title of steward or finance minister; and Cautioned.

* * * *

"Mum, we've knocked the ladder down."
"Well, run and tell your father."
"He knows already."

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

Which did the boy light first? Clearly the match!

The diagram at the foot of the column gives the solution to our second puzzle this month. This should have proved easy for those who made a start with 4 across, in conjunction with 3 across.

	6	5	4
6	4		3
1		1	6
2	1	8	

The poultry farmer of our third puzzle clearly was doing poor business, for the number of eggshe had for sale was only 7.

You'll never catch

REG HARRIS

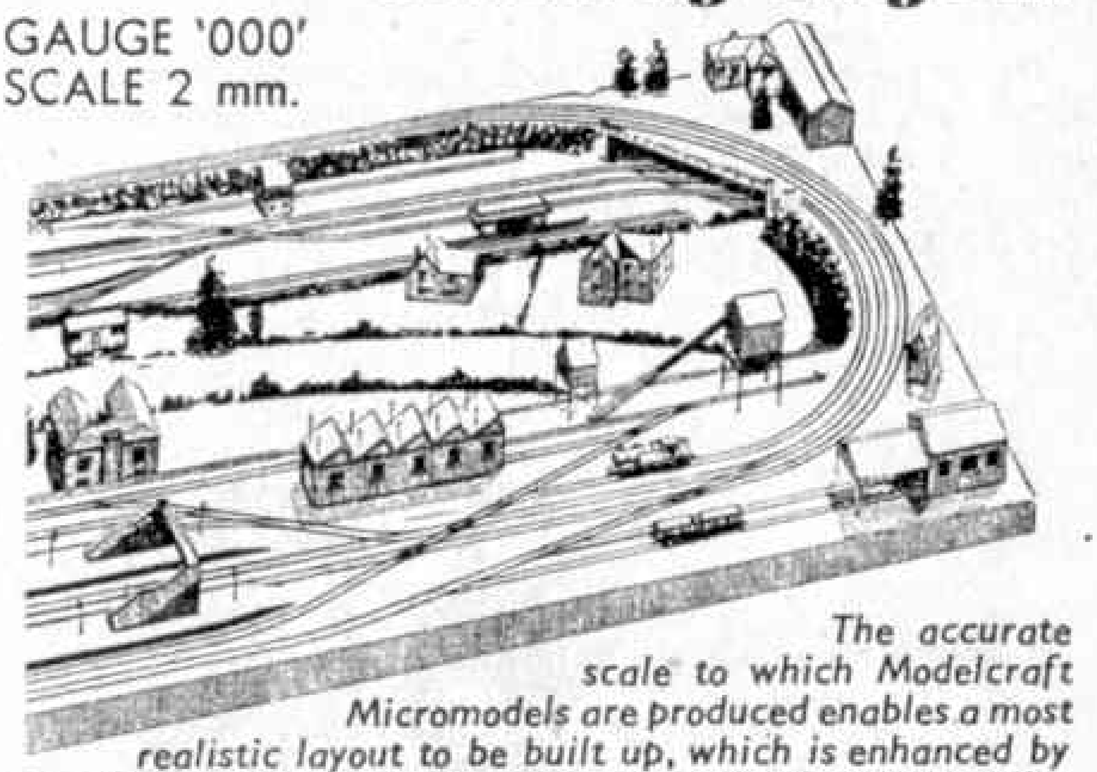
riding anything but

DUNLOP

50H/356

Build a TABLE-TOP Railway Layout

GAUGE '000'
SCALE 2 mm.



The accurate scale to which Modelcraft Micromodels are produced enables a most realistic layout to be built up, which is enhanced by the addition of trees, bushes, etc., from the 'Treemaker' Kit.

- **MICROMODEL TRACK CARDS** Full colour, each approx. 10" of double track. Order Straight, Curves or crossovers. ... each **2½d.**
- **'TREEMAKER' KIT** To make trees, bushes, shrubs, etc., to scale. **3/1**
- **MICROMODEL "ROLLING STOCK"** L.N.E.R. "Flying Scotsman," "Sandringham," Tank Loco. L.M.S. "Princess Royal," Diesel-Electric, S.R. "Lord Anson," "Channel Packet," etc. S.R. Passenger Coaches (2) **6d.** Goods Wagons (not colrd.) (5) **6d.** **each 4d.**

AT YOUR LOCAL MODEL SHOP or from

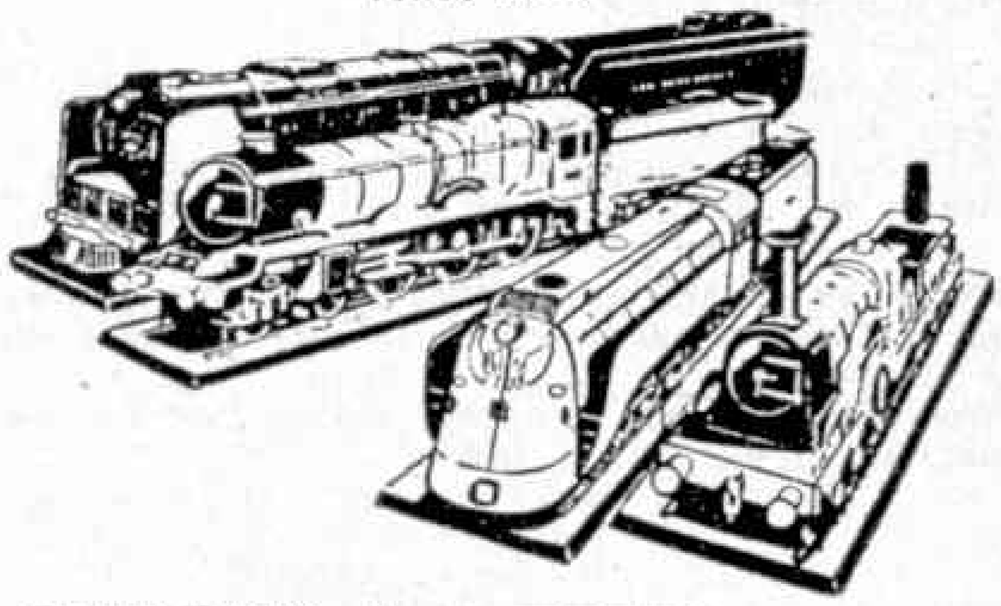
MODELCRAFT

77 (H), Grosvenor Rd., London S.W.1

Postage: 1d. in 1/-. Minimum 3d.

Micromodels

TRADE MARK



BUILDING these miniature replicas of interesting and beautiful Mechanical, Architectural, Industrial and Maritime Subjects has become a serious cult. Printed on special cards, the units are readily cut, shaped and assembled to form perfect three-dimensional models authentic in every detail. They cost but a few pence, but often sell for guineas

Send stamped addressed envelope for Illustrated Descriptive Catalogue.

MICROMODELS LTD.
3(MM). Racquet Court, London E.C.4

SHIPS
GALLEONS
LOCOS
HISTORIC & ARCHITECTURAL SUBJECTS
ENGINEERING
MOVING TOYS
ETC.

THE FUTURE IS YOURS
PREPARE FOR IT NOW

Maximum production, on which the life of the nation rests, depends on high technical skill. This gives marvellous opportunities to young men who have acquired such knowledge and efficiency as that contained in an I.C.S. Course of Instruction.

THE DEMAND FOR WELL-TRAINED MEN IS URGENT AND UNLIMITED — BUT THERE IS NO WORTH-WHILE PLACE FOR THE UNTRAINED

If you need technical training, our advice on any matter concerning your work and your career is yours for the asking—free and without obligation. Let us send you full information regarding the subject in which you are specially interested. DON'T DELAY. Make ACTION your watchword.

The successful man DOES to-day what the failure INTENDS doing to-morrow. Write to us TO-DAY.

Generous Discount granted to members of H.M. Forces

The I.C.S. offer Courses of Instruction in a wide range of subjects, including:

Accountancy
Advertising
Copy Writing
Advertising Management
Air and Vacuum Brakes
Air-Conditioning
Arable Farming
Architecture
Boiler Engineering
Book-keeping
Building
Business Training
Business Management
Carpentry and Joinery
Chemical Engineering
Chemistry, Org. & Inorg.
Civil Engineering
Clerk of Works
Coal Mining
Commercial Art
Concrete Engineering
Diesel Engineering
Draughtsmanship
Drawing Office Practice
Electrical Engineering
Eng. Shop Practice
Fire Engineering
Foremanship
Heating and Ventilation
Horticulturist
Hydraulic Engineering
Hydro-Electric
Illumination Engineering
Journalism (Free Lance)
Machine Designing
Maintenance Engineering
Marine Engineering
Mechanical Drawing
Mechanical Engineering
Mine Surveying
Mining Electrical
Motor Engineering
Motor Mechanic
Plastics
Production Engineering
Quantity Surveying
Radio Engineering
Radio Service Eng.
Railroad Engineering
Refrigeration
Salesmanship
Sales Management
Sanitary Engineering
Sheet-Metal Work
Short-Story Writing
Steam Engineering
Structural Steelwork
Surveying
Telegraph Engineering
Television Technology
Toolmaking
Welding, Gas and Elec.
Woodworking Drawing
Works Engineering
Works Management

And most of the Technical, Professional, Commercial, Educational and Civil Service Exams., also for General Certificate of Education.

(Examination students are coached till successful.)

YOU MAY USE THIS COUPON

(Penny stamp on unsealed envelope)

INTERNATIONAL CORRESPONDENCE SCHOOLS LTD.

Dept. 218, International Buildings, Kingsway, London W.C.2

Please send booklet on subject.....

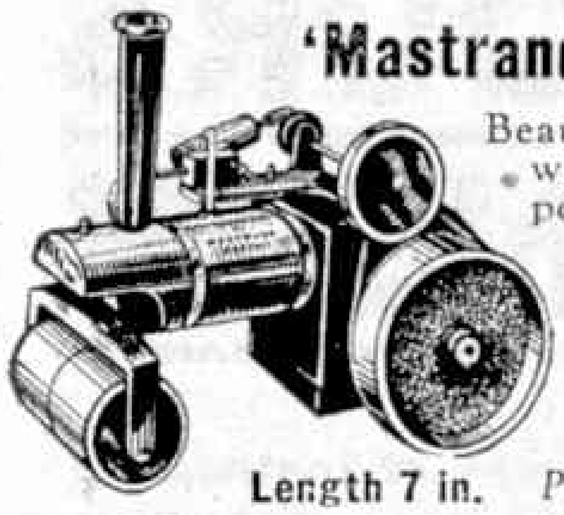
Name..... Age.....
(BLOCK LETTERS PLEASE)

Address.....

.....

I.C.S

GAMAGES

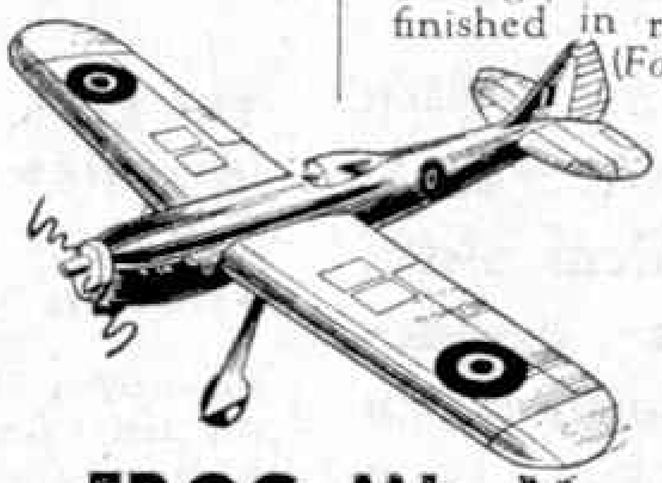


'Mastrand' STEAMROLLER

Beautifully finished "live steam" working model with die-cast polished aluminium wheels, rollers, etc. Chromium cylinder. Partly enamelled red and green.

54/-

Length 7 in. *Post & pkg. 1/3*



FROG Mk. V FIGHTER

Wing Span 12 in.

The most popular "ready-to-fly" model aeroplane ever produced. Realistic in appearance and flight. Special features include knock-off wings, etc., to avoid damage. Spares always available and easy to fit.

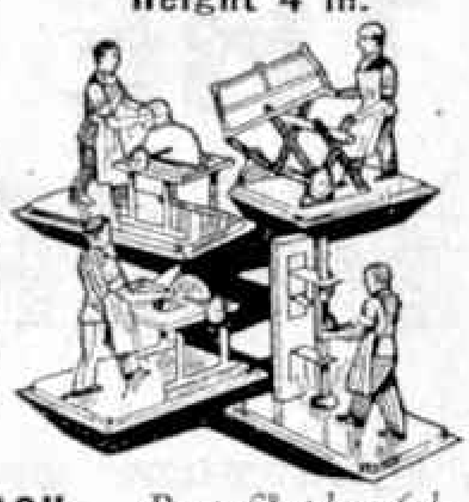
GAMAGES PRICE **12/6**

Post 11d.

MINIATURE WORKING MODELS

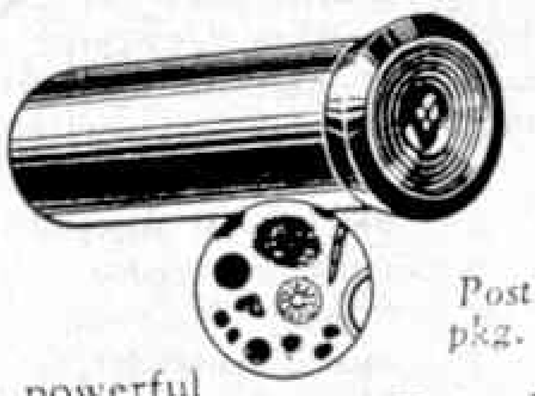
Make up your own busy workshop scene with these grand little working men. Suitable for drive by electric motor or steam engine. Strongly made and well finished in realistic colours. *(Foreign)*

Height 4 in.



3/11 EACH *Post & pkg. 6d.*

POCKET MICROSCOPE



Post & pkg. 4d.

A powerful little magnifier only 2½ in. long. With it you can watch the actual movement of particles in a drop of pond water, or study the weave of a piece of linen. Unbreakable steel casing with black plastic eyepiece. GAMAGES PRICE **3/6**

'SCULPTORCRAFT'

Make and decorate your own models. A new kit complete with rubber moulds of figures, modelling material, paints and full instructions. 'Riders of the Range' Kit.

17/6

Large Kit with 4 standing figures.

21/-

Post & pkg. 1/-

GAMAGES, HOLBORN, LONDON E.C.1

New 64-Page Conjuring Catalogue 1/-

EXTEND
Your Xmas Present!

Many a lucky boy will have received for his Christmas Present a "00" Gauge Hornby-Dublo Train Set, and will be considering the possibility of mounting the track on a Permanent Baseboard, and the scope offered by extending the layout using the PECO-INDIVIDUALAY system of Track Construction for the Home User, or PECO-WAY, the assembled Curvable Track that comes to you complete with ballast and fishplates.

Hundreds of enthusiasts already enjoy the advantages of being able to plan the maximum amount of trackwork in the minimum space, using curves of any radius and points to any design.

Enjoy the thrills of being a real platelayer, and write to-day to the PECO TECHNICAL ADVICE BUREAU for free leaflet or Complete Catalogue, price 1/3.

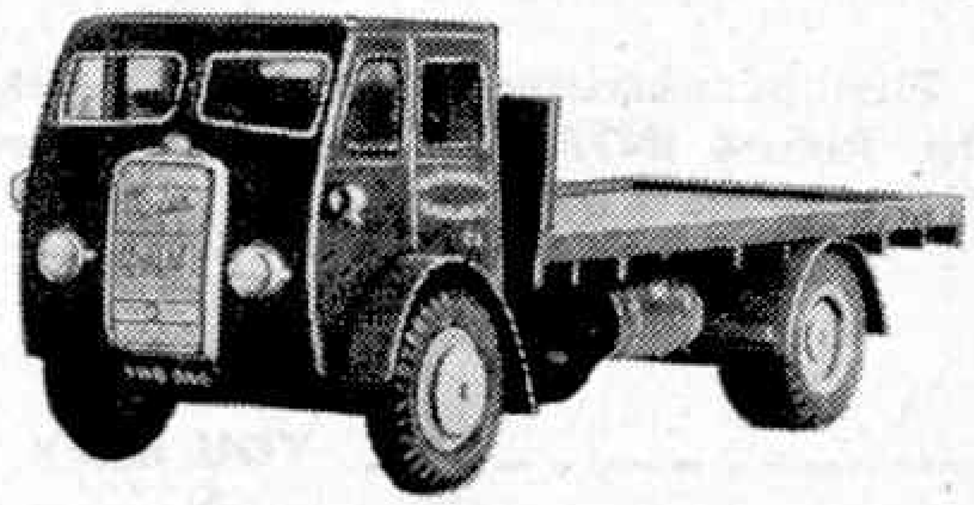
Model Railway Enthusiasts should read
THE RAILWAY MODELLER
Monthly - 1/6
Specimen copy from PECO - 1/8

THE PRITCHARD PATENT PRODUCT CO. LTD.
PECOWAY. STATION ROAD. SEATON. DEVON

WILSON'S LORRIES LTD.

Dept. M

6, Gt. Winchester St., London E.C.2



BUILD YOUR OWN

4 mm. and 7 mm. lorry kits

Send for
ILLUSTRATED CATALOGUE
1/- post free

24 "no-tools-to-make-em" outfits
and a host of Spare Parts

Now you can take Indoor Photographs with ANY CAMERA

By using an ordinary box camera and the Johnson Indoor Photography Outfit you can take splendid indoor snapshots of your family, friends and pet animals. Think of the opportunities for unforgettable pictures. Happy, natural, homely scenes. Mother darning socks by the fire. Father washing up. Baby brother in his bath. The chances you will have are endless.

THE JOHNSON

INDOOR PHOTOGRAPHY OUTFIT

Complete, in box with Torch, Reflector, Batteries, Adaptor, four PF.14 Photoflash bulbs and full instructions. PRICE (inc. P.T.) only **10/8**

From all Photographic Dealers

JOHNSONS OF HENDON LTD., LONDON N.W.4

British Railway Transfers

We have now produced a complete range of Gauge "OO" and "O" British Railway transfers.

Prices	Gauge	"OO"	"O"
Totems, small	per pair	6d.	6d.
Totems, large	per pair	6d.	6d.
Locomotive numbers, 1-0	per set	6d.	6d.
Coach numbers, 1-0	per set	6d.	6d.
Class numbers, "1"	per doz.	9d.	9d.
Restaurant, Buffet, Sleeper, Kitchen	per each pair	6d.	9d.
Guard	per doz.	6d.	9d.
Lining transfers:			
Red-cream-grey	per length	3d.	3d.
White-black-white	per length	3d.	3d.
Orange-black-orange	per length	3d.	3d.
Black-yellow	per length	3d.	3d.

All prices, plus packing and postage.

Special Offers

Meccano Solid Brass Wagon Buffers, complete with securing nut. Part No. 120. Price 1/- set 4, plus postage.

6.B.A. Steel Cheesehead Screws, ⅜ in. long. Price 3/- per gross, plus postage.

Cedar Wood, $\frac{3}{32}$ in. x 2 in. x 18 in. long, ideal for all model making. Price 4/6 doz. lengths, plus packing and postage 9d.

Gauge 'O' Metal Coaches, complete with bogies, L.M.S., G.W.R. or S.R. Surburban or Corridor coaches, also Brake-End coaches. Price 73/4, plus packing and postage 1/6

Gauge 'OO' Metal Coach Bodies, only in L.M.S., G.W.R. or S.R. Suburban or Corridor coaches or brake-end coaches. Price 36/8 plus packing and postage 1/-

Gauge '00' Coach Bogies for above, 13/1½ per pair extra.

BOND'S O' EUSTON ROAD LTD.

357, EUSTON ROAD, LONDON N.W.1

Est. 1887 *'Phone: EUSton 5441-2*

A CAREER AT SEA

His training over at

THE PRINCE OF WALES SEA TRAINING SCHOOL

he begins life in the Merchant Navy.

If your ambition is to be a sailor, an intensive training course of four months duration at one of the finest establishments of its kind in the United Kingdom will equip you with the knowledge and opportunity to fulfil that ambition.

Enquiries from applicants between the age of 15 years 8 months and 17 should be addressed:

General Secretary:

BRITISH SAILORS' SOCIETY

680, Commercial Rd., London E.14. (Tel. East 4191)

RAWLPLUG PRODUCTS

INDISPENSABLE IN THE WORKSHOP HANDY IN THE HOME

The Rawlplug Popular Outfit. Larger sizes are obtainable.

RAWLPLUG

FIXING DEVICES AND TOOLS

Whatever your fixing problems, there's a Rawlplug Device that will solve it for you—easily and quickly. Rawlplugs make neat and absolutely firm fixings in any material from brick or tile to stone or slate, with a size for every screw from No. 3 up to ⅞" coach screws. Rawlplug Tools are easy to use and ensure a perfect hole without damage to surrounding surfaces. Other Rawlplug Devices include Rawlbolts for heavy duty fixings, Rawlanchors and Toggle Bolts for thin or hollow materials and Rawlclips for instant fixing of conduits and cables to girders—a device in fact for every need. **Rawlplug fixing devices & products can be obtained from Ironmongers, Hardware Dealers, Stores or Model Makers Suppliers.**

IRON CEMENT Rawlplug Iron Cement hardens very quickly and only needs mixing with water. It will repair Water and Gas pipes, Radiators, Cisterns, Buckets, Kettles, Saucepans, Stoves, Kitchen Utensils, etc., etc.

DUROFIX The indispensable adhesive for instant use on crockery, glass, wood, metal, celluloid and the thousand and one things handled by the hobbies enthusiast. Instant drying, insulating, waterproof and heatproof. Durofix is grand for repairs to electrical, sports and leather goods.

DUROGLUE Undiluted Animal Glue of Incomparable strength

Ready for instant use for the many purposes for which an extra strong glue is needed. Wood, cloth, fabric, felt, leather and any greaseless surface can be stuck with Duroglue.

DUROLASTIC ELASTIC SEALING COMPOUND

Forms permanently elastic waterproof joints with great adhesive qualities to any dry surface. Resists vibration or shock and will not break away with expansion or contraction. Non-crumbling, non-staining, does not exude oil. Can be painted in a few hours. Ideal for boat-builders. In easy-to-use-tubes

B389M

THE RAWLPLUG COMPANY LTD. LONDON. S.W.7.

ASTRA

RETAIL PRICE **7'9** Purchase Tax 1/9 Extra

RETAIL PRICE **7'9** Purchase Tax 1/9 Extra

WORKING MODEL

TRAFFIC SIGNAL

Unbreakable plastic coloured lenses. 4½ volt flat battery can be housed in the base. Model approx. 6" high.

FROM ALL GOOD TOYSHOPS

Sole Patentees and Manufacturers:

ASTRA PHAROS LTD.

LANDOR WORKS, ASKEW ROAD, LONDON W.12

Interesting Bargains

CRYSTAL SETS. The Lesdix Festival Model in black bakelite case, fitted variable condenser, coil, ever-set Diode Crystal Detector, special phone transformer with plug socket, headphones with headband, cord and plug, all aerial tested, **30/-**, postage and packing **1/6**.

MORSE KEYS. Air Ministry Morse Key on bakelite base, precision built, perfect balance. Heavy insulated knob, **2/6**, post **9d.**

BUZZERS. Light practice Buzzer in metal case, tunable note, **2/6**. G.P.O. new twin-coil buzzer, **2/6**, post **6d.**

MORSE PRACTICE SETS on base with A.M. Key. Buzzer twin-coil type and battery holder, all wired ready for use, **6/6**, post **1/6**.

MAGNETS. Alni Disc Magnets, ⅛ in. dia., ⅜ in. thick, with 3/16 in. centre hole, **3/6**. Instrument Magnets. The S.L.S. 36 circular horseshoe, 1¾ in. dia., ½ in. polar gap, drilled pole, weight 2 oz., lifts 3 lb., **2/6**. D.C. Electro Magnets, 6 volts, lifts 4 lb., **5/-**, post **6d.**

DIMMER RESISTANCES. Totally enclosed, panel mounting, new, 100 ohms, ¼ amp., **2/6**, post **6d.**

MICROPHONES. G.P.O. hand mike in bakelite case, latest model carbon inset, **3/6**, post **9d.** G.P.O. Micro buttons. The 1 in. brass body forms the granular chamber. The diaphragm is of thin mica. Needs only a 4½ volt pocket battery and transformer. Mike button, **3/6**, post **1/-**. Transformer, **2/6**, post **6d**. No. 3 Hand Mikes, fitted double Button and switch in handle, **6/6**, post **1/-**. Transformer, **2/6**, post **6d.**

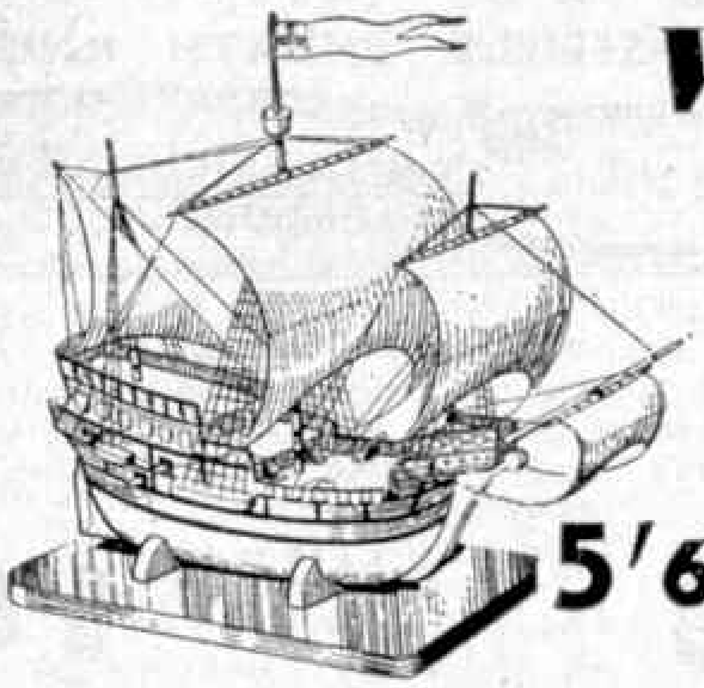
HEATER ELEMENTS, 24 volts 75 watts, for soil warming, etc., **1/6** each. Ten can be used in series off 240 volt mains. Special price for quantity orders.

TRANSFORMERS for model railways, etc., 105/230 volts input, 12 volts 3 amps output, double wound, **21/-**, post **1/6**.

ELECTRADIX RADIOS

214, Queenstown Road, Battersea, S.W.8

Telephone: MACaulay 2159



THE MARY FORTUNE
Kit No. 2914

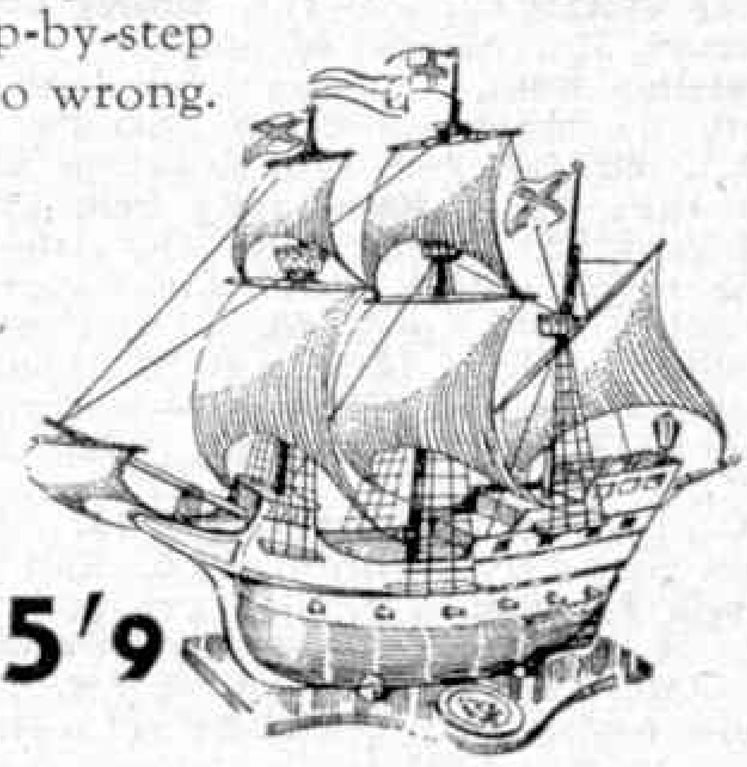
Why not make these Miniature Galleons?

Making models of old-time ships from Hobbies Kits is one of the most absorbing of all pastimes—and it's inexpensive, too. Only a fretsaw and a few tools are needed, and even the amateur will not find the work difficult. The Kits are complete wi.h all wood and necessary parts—and step-by-step instructions. You can't go wrong.

Start to-day by getting one of these excellent Kits.

Hobbies

From Stores, Ironmongers and Hobbies Branches, or post free from **Hobbies Ltd., Dept. 96, Dereham, Norfolk.** *Illustrated leaflets of our complete range obtainable on request.*



THE ½d. GALLEON
Kit No. 2778

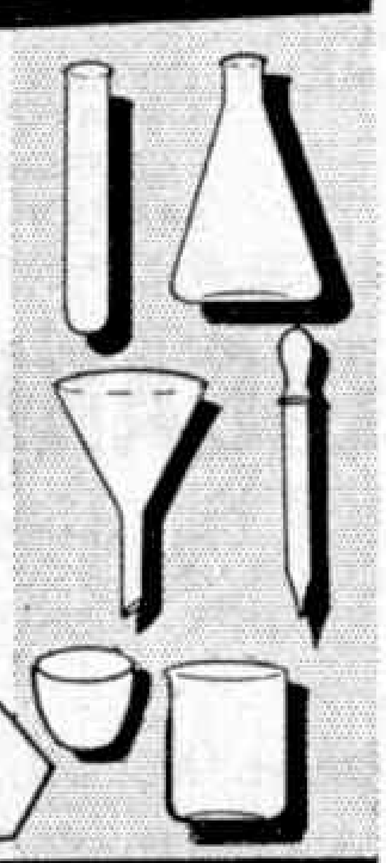
LOTT'S *Chemistry*

Convert your chemistry set to a student's laboratory by easy stages.

Supplies of spare apparatus and chemicals are now available.

Also Lott's Stone Puzzle together with free book of 105 problems.

Ask to see them at your dealer or write to the manufacturers for current price list, enclosing stamped addressed envelope 1½d.



A SMALL SELECTION FROM OUR LIST

LOTT'S BRICKS LTD
(Dept. M.M. 4) WATFORD · HERTS

Realism in Modelling

Cardboard is not a makeshift material with which to work; suitable card correctly treated gives great strength, long life and perfect detail. These qualities make it the ideal material for the building of goods vehicles, and no modeller can afford to be without our famous textbook:

"CARDBOARD ROLLING STOCK AND HOW TO BUILD IT"
Price 2/6 (by post 2/9)

The 45 pages of clear instructions, diagrams and photographs show how easily a perfect and fully detailed wagon or van can be built.

For details of ERG "Precision" Card Parts and the fine range of 00 fittings and accessories available to all railway modellers see:

"THE ERG CATALOGUE AND MANUAL"
Price 3/- (by post 3/4)

For every railway modeller's library—

"A STUDY OF THE MODEL RAILWAY"
Price 3/6 (by post 3/9)

The new fascinating textbook that gives a new insight into the hobby.

ERG (BOURNEMOUTH) LTD

The Leading 00 Trade Supply Firm
529 ROUMELIA LANE
BOSCOMBE
BOURNEMOUTH

HIGHSTONE UTILITIES

Meters. 15 v., 2½ in., m/c. **9/6;** 150 v., 2 in., m/c, **10/–**; 15/600 v., 2 in., m/c, D.R., **8/–**; 3.5 amp., 2 in. T.C., **5/–**; 4 amp., 2½ in. T.C., in case with switch, **7/6.** All meters post extra.
Bell Transformers. These guaranteed transformers work from any A.C. Mains, giving 3, 5, or 8 volts output at 1 amp., operate bulb, buzzer or bell. Will supply light in bedroom or larder, etc. Price **8/9**, post **6d.** BELLS, **6/–**. **Ex-R.A.F. 2-valve (2-volt) Microphone Amplifiers** as used in plane inter-com., in self-contained metal case; can be used to make up a deaf aid outfit, intercommunication system, or with crystal set, complete with valves and fitting instructions, **20/–**, post 1/8. Ditto, less valves, **10/–. Hand Microphones,** with switch in handle, and lead, **4/–**. Similar instrument, moving coil, **7/6,** post **6d. Mike Buttons** (carbon) **2/–. Moving Coil, 4/6; Transformers, 5/–.** All post **4d.** each.
Soldering Irons. Our new streamlined Iron is fitted with a curved pencil bit; 200/250 v. 50 watts, **10/–. Standard Iron** with adjustable bit, 200/250 v., 60 watts, **11/–. Heavy Duty Iron,** 150 watts, **14/6,** all post **6d. Crystal Sets.** Our latest Model is a real radio receiver, fitted with a permanent crystal detector, **10/6,** post **6d.** De Luxe Receiver in polished cabinet, **18/6,** post **1/–.** Spare Permanent Detectors, **2/–** each. When ordered separately, **2/6,** with clips and screws, **2/10,** post **3d.** Headphones, brand new, S. G. Brown, G.E.C., etc., **15/–, 23/–,** and super-sensitive, **30/–,** post **8d. New Headphones, 10/–.** Balanced armature type (very sensitive), **12/6.** Both post **8d.** New **Single Earpieces, 3/6.** Bal. armature type, **4/6;** ex-R.A.F. earpiece, **2/–,** post **4d. Headphones,** in good order, **5/6** (better quality), **7/6,** all post **8d.**
Letters only. Money refunded if not completely satisfied.

58, New Wanstead, London E. 11
Illustrated List sent on request with 1½d. stamp and S.A.E.

CHEMISTRY APPARATUS

Send 2½d. Stamp for latest
PRICE LIST

BOOKLETS:
"Experiments" 10½d.
"Formulas" 10½d.
"Home Chemistry" 2/3
Post Paid

BECK (Scientific Dept. G), 60, High Street
STOKE NEWINGTON, LONDON N.16

THE MYSTERY OF THE SANTA CRUZ

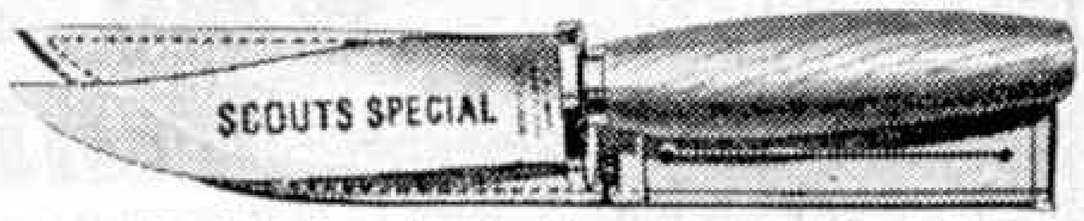
By James M. Downie

To be confronted at sea by a schooner without a crew was only the beginning of many thrills. Pitting strength and courage against a murderous pirate the enemy is outwitted. **7s. net**

FREDERICK WARNE & CO. LTD.
1, BEDFORD COURT, LONDON W.C.2

THIS IS *IT* CHAPS!

A SUPER SHEFFIELD SHEATH KNIFE



8 INCHES LONG from the tip of its razor-edged Sheffield Steel blade to the top of its turned wood handle; complete with solid leather sheath. Also available, finest quality sheath and hunting knives with fancy handles 6" - 8/11, 8" - 12/11, 9" - 18/6 and perfectly balanced 7½" Throwing Knives - 9/11, all including leather sheaths.

Robin's MAIL ORDER SERVICE
DON'T MISS IT! *Post and Packing on all knives 8d. extra.* **5'4**
(Dept. M.152), 100, EAST STREET, LONDON S.E.17

LOCOMOTIVES OF THE GREAT WESTERN RAILWAY

Part 1, **Preliminary Survey,** published recently by **THE RAILWAY CORRESPONDENCE & TRAVEL SOCIETY,** accounts for the entire G.W.R. locomotive stock from 1837 to date. Building dates, Swindon and Wolverhampton Lot numbers provide a chronological account covering all locomotives. Boilers and fittings are described in detail, and there are sections on Liveries, Power Classes, Route Colours, A.T.C. Gear, etc.

8" x 6", 62 pages, 80 illustrations. PRICE 10/- post free
Obtainable from
Hon. Publications Officer,
18 Holland Avenue, Cheam, Surrey

The Latest!
SPARKS' DATA SHEETS

Shows how you can Build a Really Fine Radio of which you will be Proud and Thrilled by the results.

JUST RELEASED "THE MIDDY"

A Smashing 2-Valve All-dry Battery Set for outstanding Loudspeaker or 'Phone results on M.W. and L.W. (British and Continental, plus "Ship-to-Shore" Transmissions) with a short aerial. The Ideal Set for your Den, Camp or College. Easy and inexpensive to build. REMEMBER Sparks' Constructional Data Sheets are the Finest obtainable. Every detail is so clear that you *cannot* go wrong, as many thousands of satisfied clients have proved. The Full-size Data Sheet, with descriptive matter, for the "Middy" is only 3/- plus 2½d. Stamp.

MANY OTHER DESIGNS AVAILABLE, SEND STAMP FOR LATEST LIST
COMPONENTS CAN BE SUPPLIED
SPARKS' DATA SHEETS (MM)
48a, High Street, Swanage, Dorset

CIGARETTE CARDS

Send 4d. for CATALOGUE of over 1,000 series. Albums to hold 200 cards 1/9½, to hold 100 cards 1/3. DOGS, BIRDS, AEROPLANES, SHIPS, CARS, BOXING, CRICKET, RAILWAYS, SOLDIERS, 20 cards any subject 1/3.

E.H.W. LTD.
Dept. 'M,' 42, Victoria St., London S.W.1

AMERICAN MAGAZINES

Subscriptions arranged for Popular Science, Model Railroader, Trains, etc. Popular Mechanics books available. S.A.E. Lists: **PETER F. HOBSON, DEPT. M.M., 79, SOUTHBROOK ROAD, EXETER**

HOW TO MAKE AT VERY LOW COST

(1) A SILK SCREEN PRINTER—prints in brilliant colours up to 13 in. x 9 in. including the amazing new "Day-Glo" cards, posters, pictures, also wood and metal toy parts, etc. Also suede finishes. Complete kit—Silk, Squeegee, six colours and parts to make with instructions, **37/6**. Instructions only, **5/6**.
Samples, photo. 2/- (credited).

(2) AN ELECTRIC GOLD BLOCKING PRESS—gold prints leather, paper, wood, cloth, etc. Absolutely complete machine, ready to assemble. Foil, type, instructions, **37/6**. Samples, photo. 2/-.

(3) A FULL SIZE LOOM—to weave cloth up to 30 in. wide. Complete plans. Made from wood, **5/6**.

(4) YOUR OWN PHOTO EQUIPMENT—Enlargers, Printers, Timers, etc. 12 designs .....**6/-**.

All prices include postage. Post order NOW to:
A. P. SUPPLIES, Sedgeford, King's Lynn, Norfolk

BOOKS:			
"00 Layout and Design"			3/6
"I Drove Cheltenham Flyer"			8/6
"New Developments in Railway Modelling" ..			15/-
DIECAST LOCOS., SUITABLE HORNBY-DUBLO USE:			
0-6-0 G.W.R. Pannier Tank, 12 V., D.C. ..			70/3
0-6-2 B.R. Tank, 12 V., D.C.			68/-
0-6-2 B.R. Tank, Clockwork			28/6
Dermic Oiler, oils locos properly			4/11
RAILWAY ACCESSORIES:		00	0
Fogmen's Huts with Fire		3/-	3/-
Contractors' Huts		3/9	6/6
Bungalows		5/9	9/6
Weighbridge and Office		7/6	—
Tunnels, S/Line		5/-	6/-
Sheet L.M.R. or S.R. Station Signs ..		7d.	—
Platform Yard Crane		3/9	6/3

Postage extra "00" or "0" Parts List 3d. per post.
TYLDESLEY & HOLBROOK (M.E.T.A.), 109, DEANSGATE, MANCHESTER 3

Happy New Year Books
from IAN ALLAN

PREMIER LINE by O. S. Nock .. .. The story of L.N.W.R. Locomotives	26/-
LONDON'S UNDERGROUND	11/3
LONDON'S UNDERGRD. in PICTURES ..	2/8
A.B.C. of L.T. BUSES and COACHES (1952)	2/8
A.B.C. of BRITISH LOCOS. (1952) Comb.	10/-
A.B.C. of BRITISH LOCOS. (1952) each part	2/2
A.B.C. LOCO. SHED BOOK (1952) ..	2/8

LOCOMOTIVE PUBLICATIONS
32, APPROACH RD., LONDON BRIDGE, S.E.1

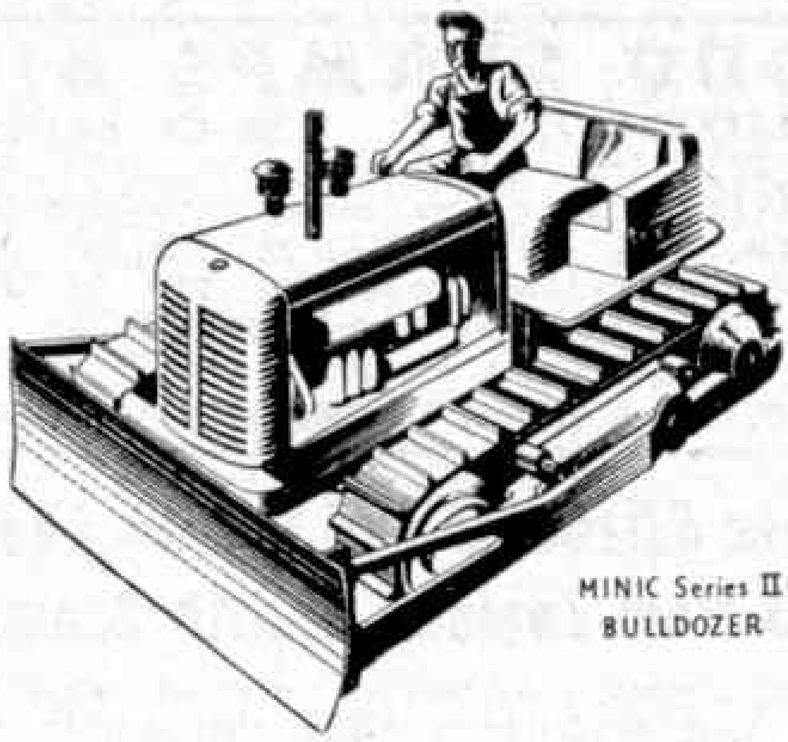
PERSONAL ATTENTION MEANS A LOT TO THE MODELLER

We have the largest stock of model materials, aircraft and railway kits and accessories in the North. Your mail order by return. Send 4d. stamp for eight-page list.

WILMSLOW MODEL CO.
Water Lane, WILMSLOW, Cheshire

Crystal Set Kits 15/- Complete with instructions. Endless entertainment and no further expense. Ideal for School or College. Lightweight Headphones **15/-**. All post free.
W. Buckle (Dept. M), 77, Horringer Rd., Bury St. Edmunds

READY FOR THE HEAVY WORK



MINIC Series II BULLDOZER

Off it goes, piling up the sand and stones, back again for another run, just like a real bulldozer! It's a Tri-ang Minic Bulldozer—a perfect scale model of an Allis-Chalmers HD20 Diesel Tractor. It costs 26/11 plus 1/6 postage and packing. Send off to-day!

Hamleys
Estd 1760
HAMLEY BROTHERS LTD.
200-202, REGENT ST., LONDON W.1
(Our only address) *Telephone: REGent 3161*

STUDY AT HOME FOR THE NEW
GENERAL CERTIFICATE

OF EDUCATION—the certificate that **opens the door to ANY career.** It is the hall-mark of a good general education, the first step to a degree, and exempts from most professional prelim. exams. Wolsey Hall (founded 1894) provides efficient postal tuition for the G.C. of E. exams. of London, Oxf., Camb., and the Northern Universities. Moderate fees, instalments. **Prospectus** (mention exam.) from C. D. Parker, M.A., LL.D., Dept. GK5,

WOLSEY HALL, OXFORD

WEBLEY AIR PISTOLS

Marvellously accurate for target practice

No licence required to purchase for use on enclosed premises.

Senior **Mark 1**
Junior **Webley Air Rifle**

Write for list. WEBLEY & SCOTT LTD.,
87, Weaman Street, Birmingham, Eng.

W.S.5.R.

STAMP ADVERTISEMENTS

(See also pages 40 and 42)

1,000 STAMPS 6/9
ALL DIFFERENT. NO GT. BRITAIN
500, **3/3**; 250, **1/9**; 100, **1/–**. BRITISH COLONIALS, many large pictorials, 100, **1/6**; 200, **3/6**; 300, **6/9**. AIRMAILS, 25, **1/9**; 50, **3/3**; 100, **6/9**. TRIANGULARS, 10, **1/9**; 25, **4/9**. RAILWAY ENGINES, 10, **1/–**; 25, **2/6**. All Post Free. 12-page Bargain Cat. Free. APPROVALS.
S. TATLOW & SONS, ECKINGTON, SHEFFIELD

Princess Elizabeth and Prince Charles
1950 New Zealand Health Stamps
This set of 2 stamps are among the most popular ever issued. I can send them **FREE** this month to all genuine approval applicants enclosing 2½d. postage. Don't waste time—write to-day.
H. B. LANG (P.T.S.),
BURNBANK — MAUCHLINE — AYRSHIRE

BRITISH HIGH VALUES FREE!
Fine pair large British 5/- and 2/6 stamps free. This design was withdrawn from issue some months ago and now scarce. Request approvals and enclose 2½d. stamp.
H. PEARSON, 61, DULVERTON RD., RUISLIP, MIDDLESEX

FREE G.VI G.B. 10/–, now obsolete.
Send 3d. post, request approvals containing U.P.Us., Weddings and latest commemoratives.
GODDARD, 29, ARCADE, BOSCOMBE, HANTS.

BOYS! JOIN BUCHAN'S BOYS CLUB
Get the privileges of membership and wear the grand badge NOW. Splendid prizes for members only. For entry form and full details see BUCHAN'S FOOTBALL MONTHLY, Britain's Greatest Soccer Magazine. From all newsagents.

LENS OF SUTTON 50, CARSHALTON ROAD, SUTTON, SURREY
Plenty of back numbers always available of "Meccano Magazines" 1930–1941, 9d. each; 1942–1949, 6d.; 1950 onwards, 9d. Also "Model Railway News," "Model Railway Constructor," "Model Engineer," all 6d. each. All "Buses Illustrateds," 1/6 each. "Trains Illustrateds" (Vol. 2—Dec. 1950), 1/– each; 1951 issues, 1/6 each. "Railway Magazines" pre-1942, 2/– each; 1942–date, 1/6. Glossy P.C.'s of Buses, Trams and Locos., 6d. each. Good clean mixed cigarette cards, 50 for 1/–. Sets 1/6. Anything of a Railway nature bought, sold or exchanged.

Learn Shorthand by 1st Feb. (1 hour's study nightly). 1st lesson 2½d. stamp. **Duttons (Dept. MO), 92, Gt. Russell St., W.C.1**

READERS' SALES AND WANTS

SALES

Twelve dozen Straight Rails, Four dozen Curved Rails, 21 Points, Hornby. Almost new; £15 or best offer for all or part. Eight Bassett-Lowke British Railways Corridor Coaches 30/– each.—Findlay, 53, Wellshot Drive, Cambuslang, Glasgow.

Hornby Train (slight attention) 21/–; Trix, Dinky Toy Cars, Sets Cigarette Cards.—Appleton, 5, Contree Mansell, Guernsey, C.I.

"M.M.s" 1936 and 1937, Spring Back Binders, good condition, and years 1930 to 1935 unbound, reasonable condition. Offers—Young, 2, MacKenzie Road, Broxbourne, Herts.

MECCANO MAGAZINE

Registered at the G.P.O., London, for transmission by Canadian Magazine Post.

EDITORIAL AND ADVERTISING OFFICES:
LIVERPOOL 13, ENGLAND.
Telegrams: "Meccano, Liverpool."

Readers' Sales and Wants. Private advertisements (i.e., not trade) are charged 1d. per word, minimum 1/–. Cash with order. Readers' advertisements are published as soon as possible; inclusion in the first issue after receiving them cannot be guaranteed.

Meccano Outfit No. 6, two Clockwork Motors, Meccano Gears Outfit A. Excellent condition, offers. Write for details to—R. Went, 103, Pedro Street, Clapton, London E.5.

Hornby Gauge 0 Electric Train Set; Rails, Points; Rolling Stock, £8 or nearest. S.A.E. for particulars—Spinks, 14, Welbourne Road, Childwall, Liverpool 16.

Dismantling huge Meccano. Enquiries invited for Spares at reduced prices. S.A.E. please—Collector, 22, Heath Terrace, Leamington Spa, Warwickshire.

Hornby Electric Railway Gauge 0 Locomotives, E320 "*Royal Scot*" and No. 1 Tenders, Passenger Coach, Guards Van, Engine Shed, Level Crossing, Stations, Signal Box, three signals, etc. 19 Curved Rails, 28 Straight Rails, 5 points, Transformer, £25 or nearest.—Haworth, Thurcroft, Barnt Green, Birmingham.

Hornby Gauge 0 Electric Set, Engine, 2 Pullman Coaches, Station, Signal, 40 Rails and Points, complete with Transformer £10 or offer.—L. D. Matthew, Highfields, Quarry Road, Oxted, Surrey. Oxted 659.

Large variety of Meccano Parts mostly in new condition, including T20 Transformer, E20R Electric Motor, E020 Electric Motor—all practically new, £3; No. 1 Reversing Clockwork Motor, 9/–. S.A.E. list.—Hill, 16, Inverness Street, Glasgow S.W.1.

"M.M.s" 1942–1948 inclusive, in perfect condition. What offers?—Bartlett, 38, Albany Road, Stratford-on-Avon.

35 "M.M.s" 4d. each. Six Hornby-Dublo Wagons and Vans 2/6 each. "*Sir Nigel Gresley*" and Tender £2/5/–; L.M.S. Tanker £1/15/–; L.M.S. Exley Coach £2; one Yacht 5/–; Wooden Railway Base 9 ft. by 4 ft. £2. Also Books.—C. Edwards, 27, St. George's Road, Petts Wood, Kent.

Six Dinky Supertoys. Mint condition. Valued at £2/12/–, first £1/15/– secures. Also 45 Dinky Toys good condition. Valued at £5, first £3/10/– secures. Willing to sell items separately. Send S.A.E. for lists. S.E.L. Electric Motor No. 1262, cost 21/–, first 10/– secures. "Bayko" Parts. Valued at £3/18/– good condition, £2/10/– secures; will sell separately. Send S.A.E. for list. "Astra" Round Base Searchlight. Cost 7/6 complete with Bulb and Battery, first 3/– secures.—M. W. Jones, 30, Wolseley Road, St. Helens, Lancs.

Mini Cine Projector 230v. A. C. Transformer, seven films, as new, perfect £4/10/–.—B. Slater, The Cottage, Warter Priory, York.

Aviation Magazines, Photographs, send S.A.E. for list.—Croxson, "Glenside," Gillett Lane, High Wycombe.

WANTS

Dinky Toy Jeeps, undamaged. All postage paid. Write—BM/MEPQ, London W.C.1.

Dinky Toys and Supertoys any condition. Also Trix Trains. S.A.E. for particulars. Will answer all replies. Write—J. F. Tempone, 2621—92nd Street, Jackson Heights, L.I., New York, U.S.A.

Complete set of Super Model Leaflets, any "Book of New Models," "Standard Mechanisms Manual," pre-war larger Meccano Outfit Manuals and other pre-war Meccano publications. High prices given for these in good condition.—Box "M.M." No. 31.

A Real Home Railway

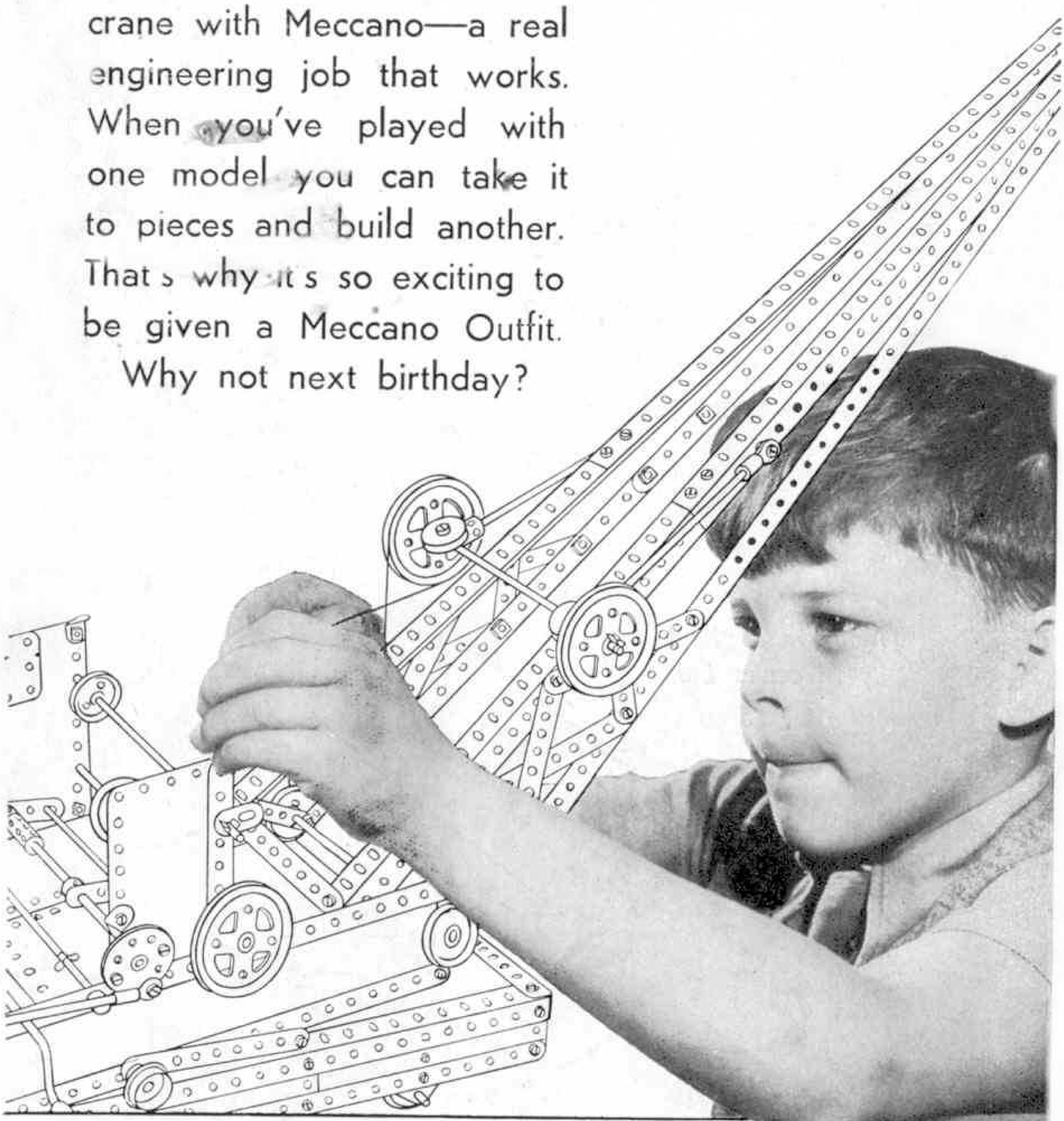
Here is the railway you have always wanted . . . every movement controlled from a single lever. To make sure of a Hornby-Dublo Train, order one from your Dealer, NOW.

Made in England
by Meccano Ltd.

HORNBY DUBLO ELECTRIC TRAINS

Exciting job, making a model crane with Meccano—a real engineering job that works. When you've played with one model you can take it to pieces and build another. That's why it's so exciting to be given a Meccano Outfit.

Why not next birthday?



MECCANO

MADE IN ENGLAND BY MECCANO LIMITED

PUBLISHED BY MECCANO LTD., BINNS ROAD, LIVERPOOL 13, ENGLAND.
Printed by John Waddington Ltd., Leeds and London